LOS PLANES PARCIALES EN COLOMBIA: UN PROBLEMA DE GESTIÓN
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CÁMARA DE COMERCIO DE BOGOTÁ.
AUDITORIO. CENTRO EMPRESARIAL SALITRE

Urban Planning Experience of Seoul
- Building a Smart and Sustainable City -

2015. 4.

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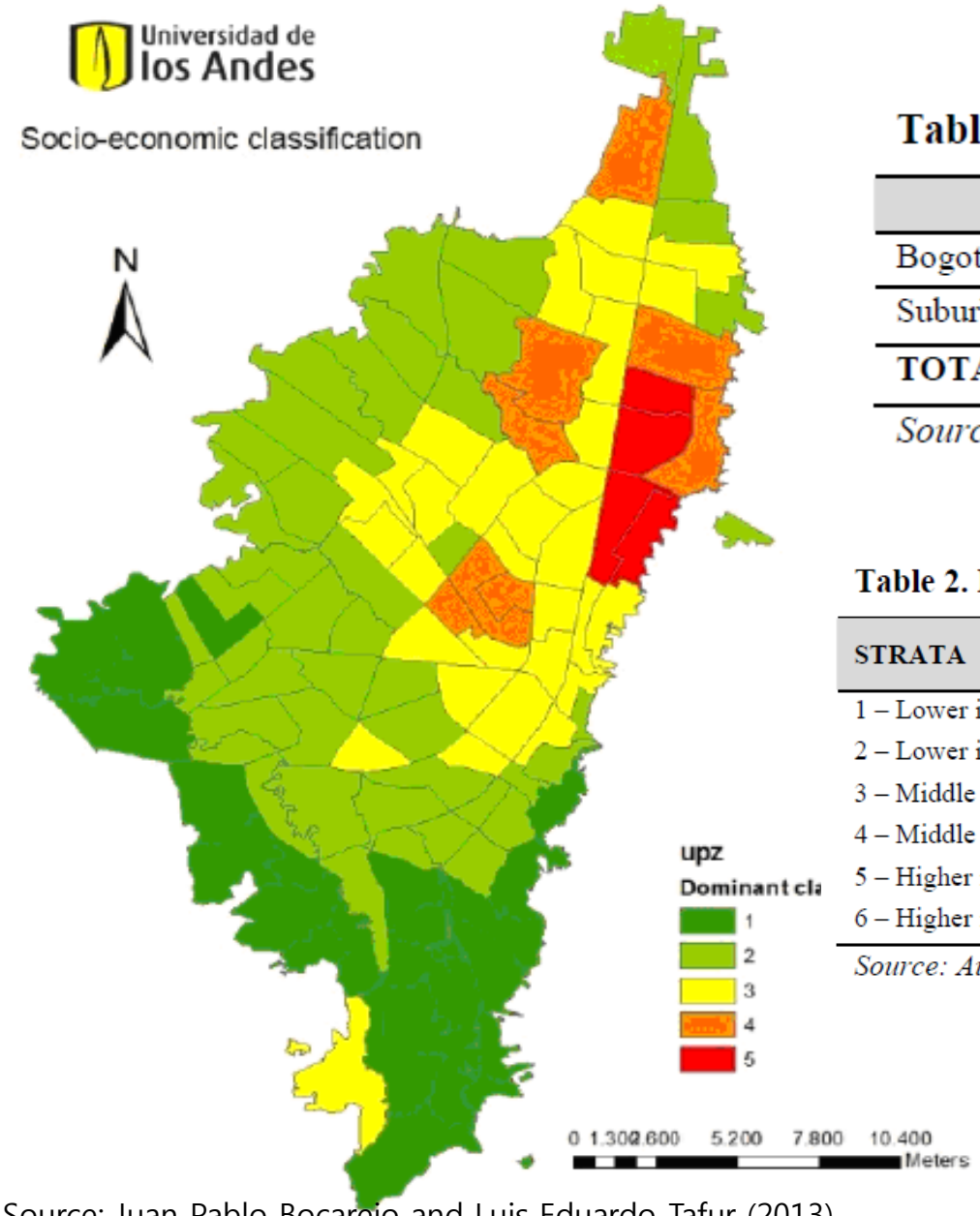
Outline

- Introduction
- Urban Planning Experience of Seoul
  - Master Plan with New Towns, Transit, Infra
  - Make Land Work (Land Readjustment)
  - Revitalize Old City Area (Cheonggyecheon Recreation)
- Concluding Remarks

Figure 2. Distribution of population according to level of income



Source: Juan Pablo Bocarejo and Luis Eduardo Tafur (2013)

Note: Strata 5 and 6 included in category number 5.

Table 1. Population of Greater Bogotá (millions)

	2010	2020	2040
Bogotá Capital District	7.36	8.38	10.83
Suburban municipalities	0.91	1.14	1.78
TOTAL	**8.27**	**9.52**	**12.51**

Source: Acevedo et al, 2009, with DANE information.

Table 2. Population of Greater Bogotá (millions)

STRATA	% of total population	Monthly income per capita (US$ 2004)
1 – Lower income	13	99
2 – Lower income	38	141
3 – Middle income	39	279
4 – Middle income	7	690
5 – Higher income	2	1,147
6 – Higher income	1	1,501

Source: Authors based on surveys from Secretaría de Hacienda de Bogotá.

Bogota, Colombia

Table 3. Annual population growth rates, Bogotá District center and external rings

Bogotá zone	Annual growth rate (1973-1985)	Annual growth rate (1985-1993)	Annual growth rate (1993 -2005)
City Centre: Candelaria, Chapinero, Santafe, Teusaquillo	0.53	-0.23	0.18
First ring: Barrios Unidos, San Cristobal, Mártires, Fontibón, Tunjuelito, Rafael Uribe, Puente Aranda, Antonio Nariño	1.43	1.38	0.37
External ring: Bosa, Usme, Ciudad Bolivar, Usaquén, Suba, Engativá Kennedy	16.75	3.40	3.42
Total Bogotá population growth rate	**5.89**	**2.3**	**2.14**

Source: Authors with information from DANE.

Table 3. Evolution of residential location in Bogotá

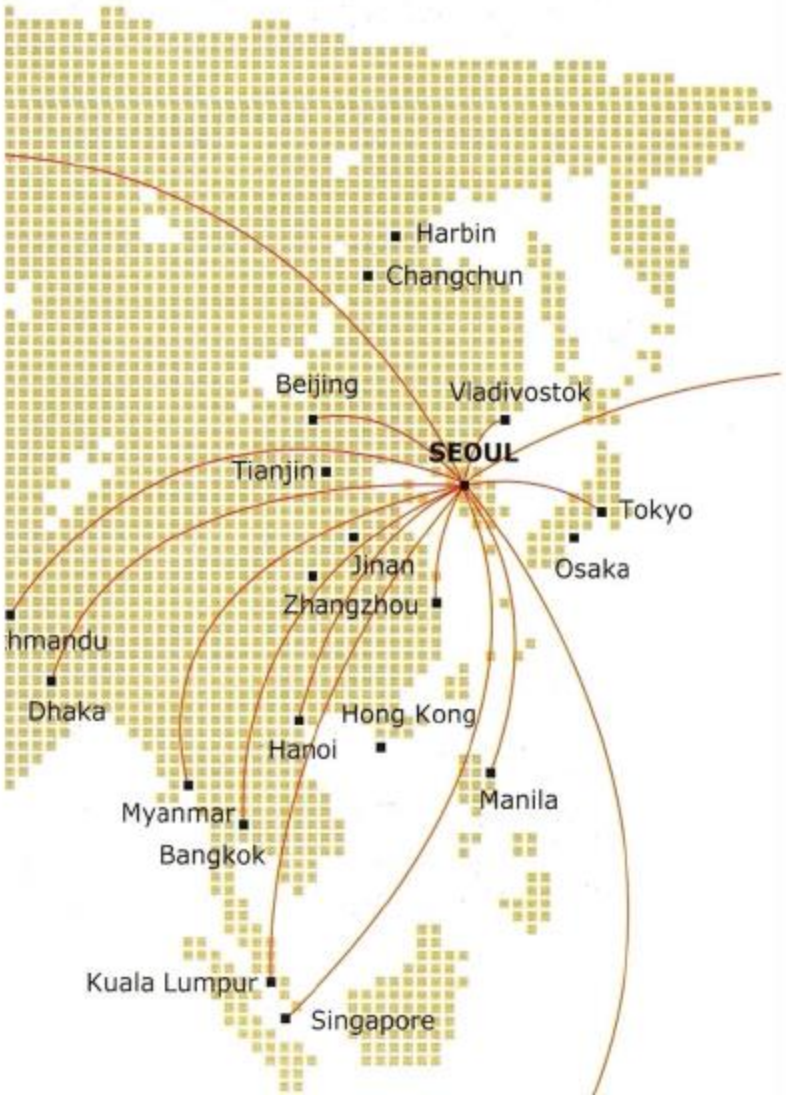
	% of Bogotá DC total population by urban zone			
Year	**1973**	**1985**	**1993**	**2005**
City Centre	14.85	9.25	7.05	5.73
First Ring	55.10	37.79	34.51	28.65
External Ring	30.04	52.96	58.43	65.53

Source: Authors with information DANE.

Source: Juan Pablo Bocarejo and Luis Eduardo Tafur (2013)

Seoul is…

Seoul in Asia



Seoul in Korea

Seoul in Capital Region

Area: 605.6㎢

Population(1,000 pers.) : 10,570

Administrative district : 25 *Gu*, 422 *Dong*

GRDP(per pers.) : $23,375

Registered Vehicle : 2.98 million

Comparison of Major Cities

• Seoul

	Area
Metro	11,730 ㎢
Seoul	605 ㎢

• Tokyo

	Area
Metro	13,494 ㎢
Tokyo (12Ward)	2,187 ㎢

• London

	Area
Metro	26,976 ㎢
Greater London	1,578 ㎢

• Paris

	Area
Metro	12,072 ㎢
Paris (Petite-Couronne)	762 ㎢

• Beijing

	Area
Metro	16,808 ㎢
Beijing	1,370 ㎢

• Singapore

	Area
Singapore	693 ㎢

• New York

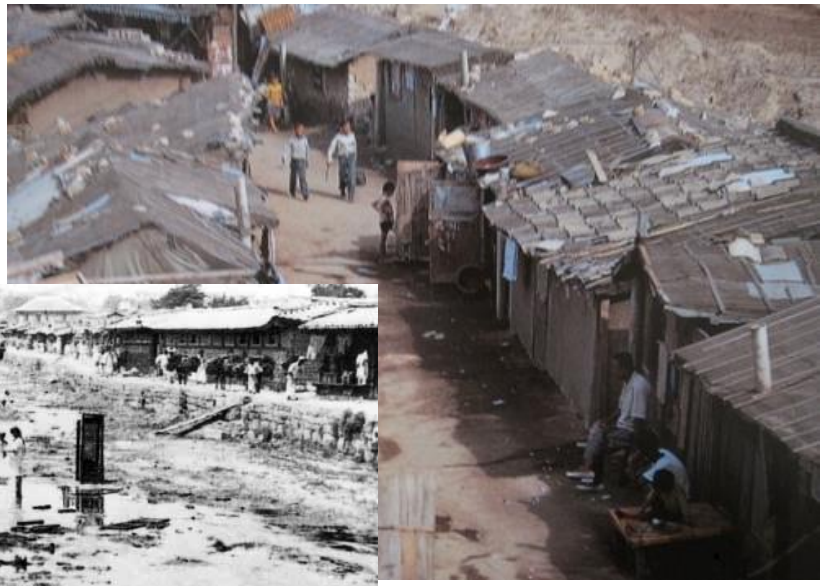
	Area
Metro	2,928 ㎢
New York	830 ㎢

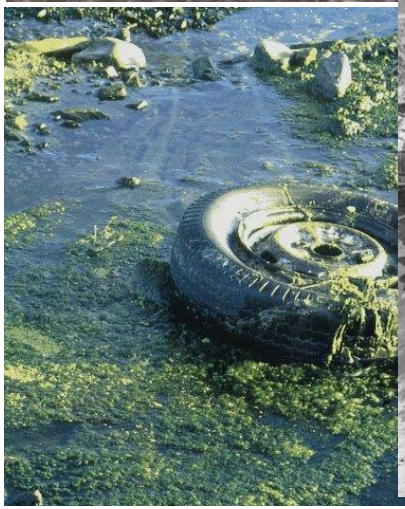
• Los Angeles

	Area
Metro	12,500 ㎢
Los Angeles	1,215 ㎢

Seoul Today

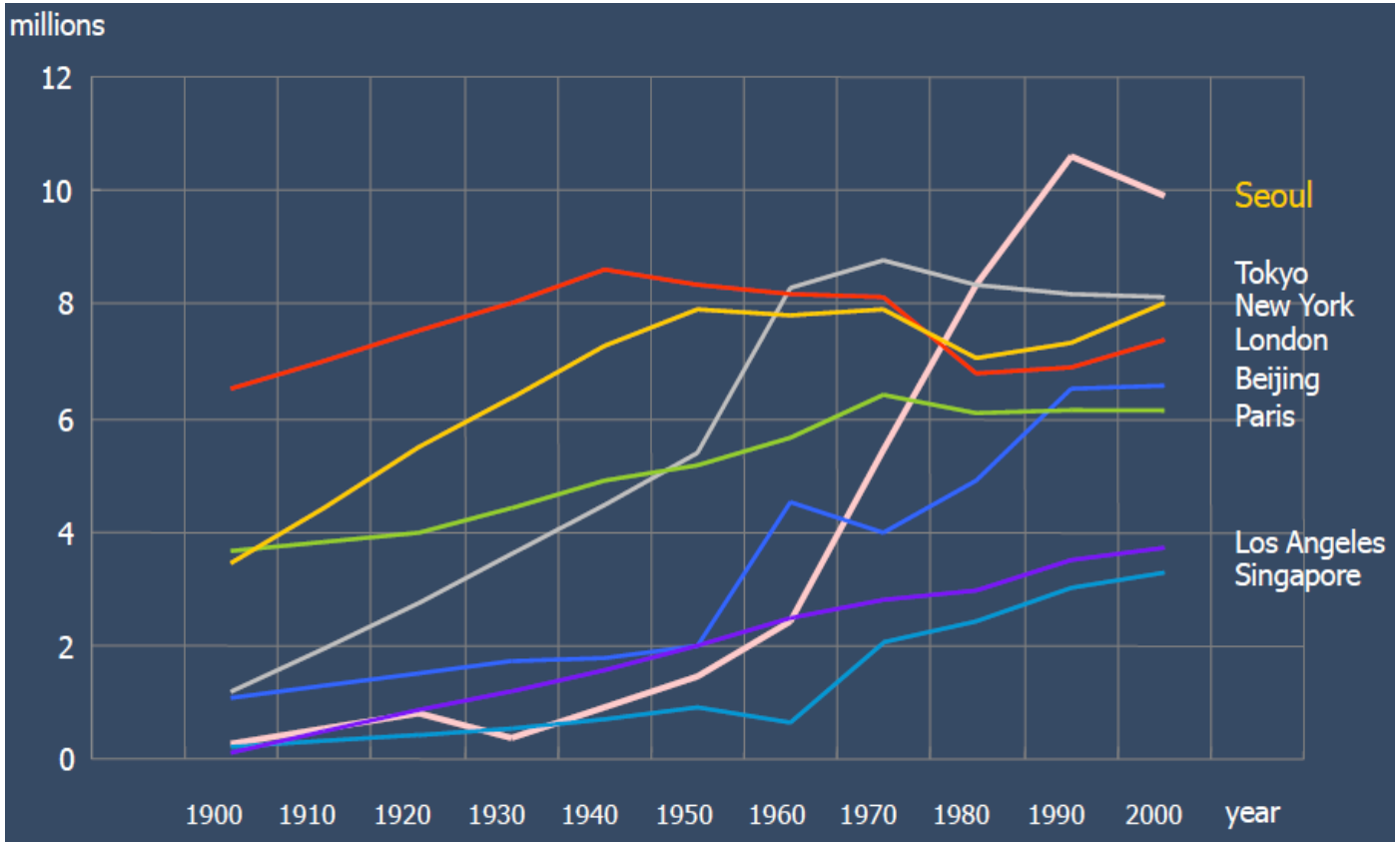
Seoul, approx. 50 years ago





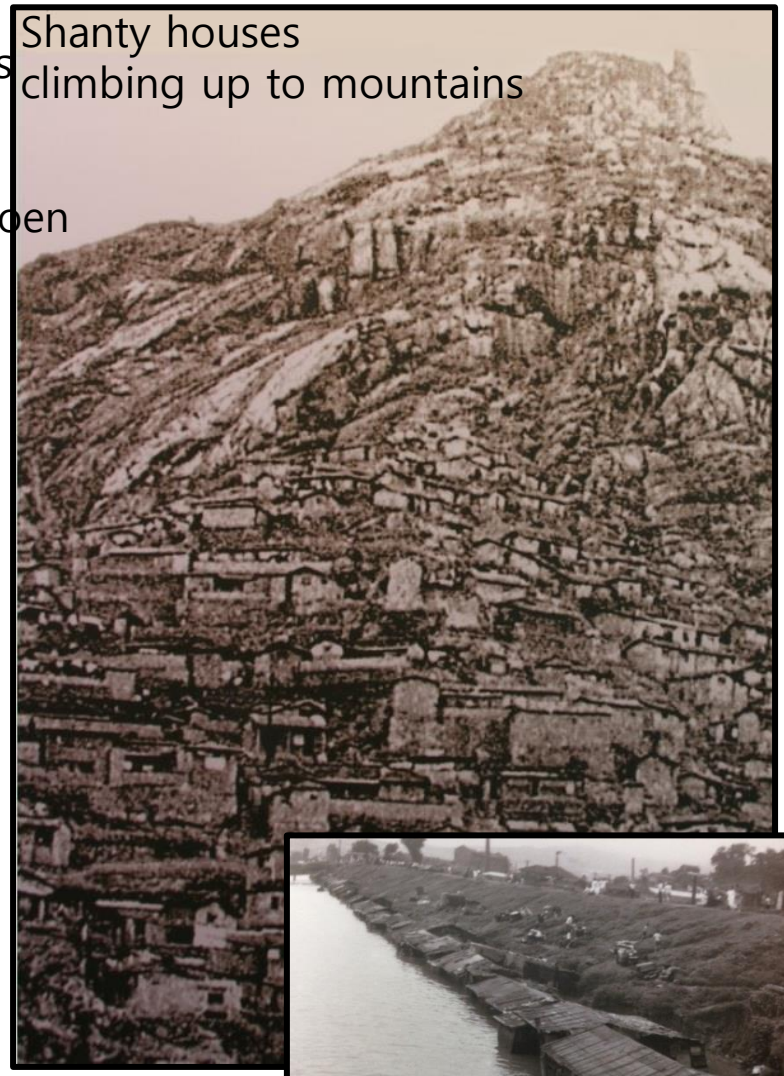
Explosive Growth of Seoul

- 270,000 people per year (22,000 people per month) for 3 decades, 1960-1990



Shanty houses with common toilets by Cheonggyechoen

Shanty houses climbing up to mountains



Shanty houses

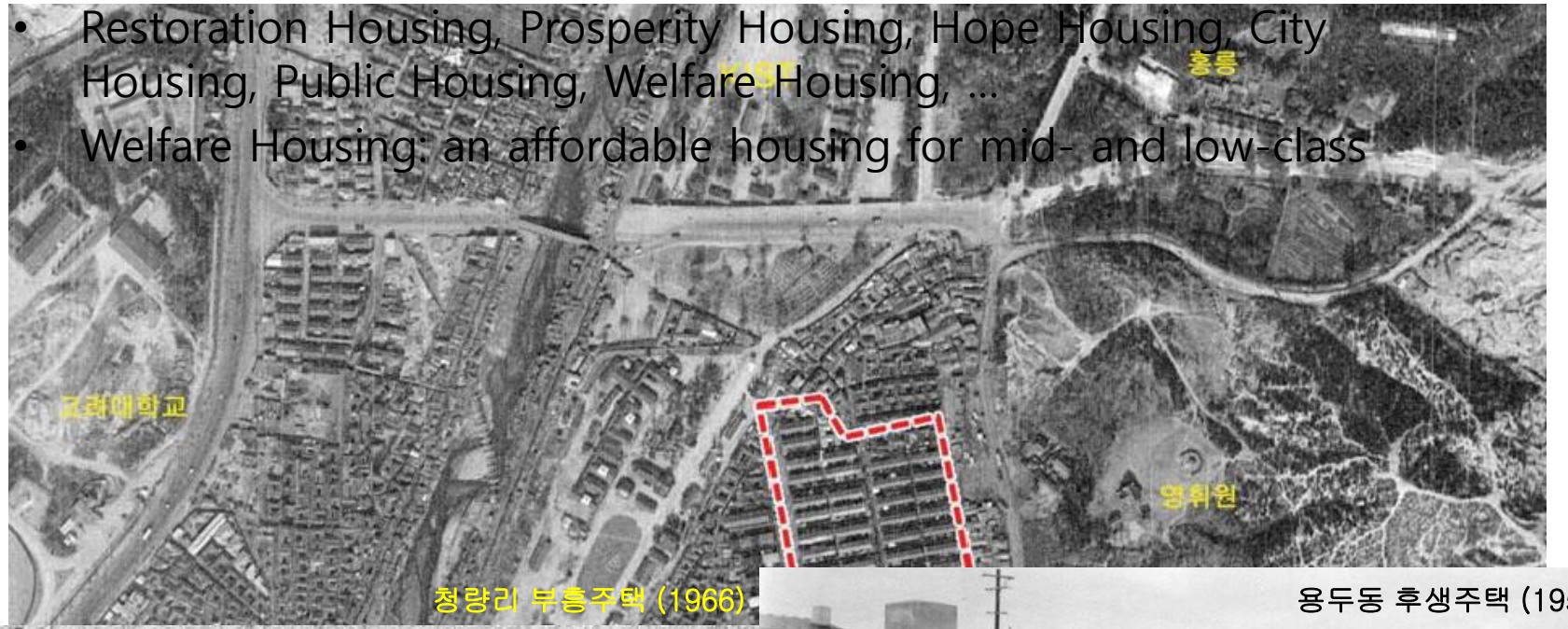
School

- Shanty : 20,870
- Tent Houses: 10,537
- Cave : 1,688호
- Beggars' places : 5,440
- Illegal houses: 38,535호
- House with Kitchen 18.3%,
- House with Bath 3%, House with Electricity 29%

Shanty houses down to Han Rive (Flood)

Urban Land & Housing Solution Until mid 1960's

- Restoration Housing, Prosperity Housing, Hope Housing, City Housing, Public Housing, Welfare Housing, …
- Welfare Housing: an affordable housing for mid- and low-class



Urban Land & Housing Solution until mid-1960's

Problem #1: Supply Shortage

Housing Supply and Demand early 1960's

3,000 vs. 300,000

1 housing unit per 100 people

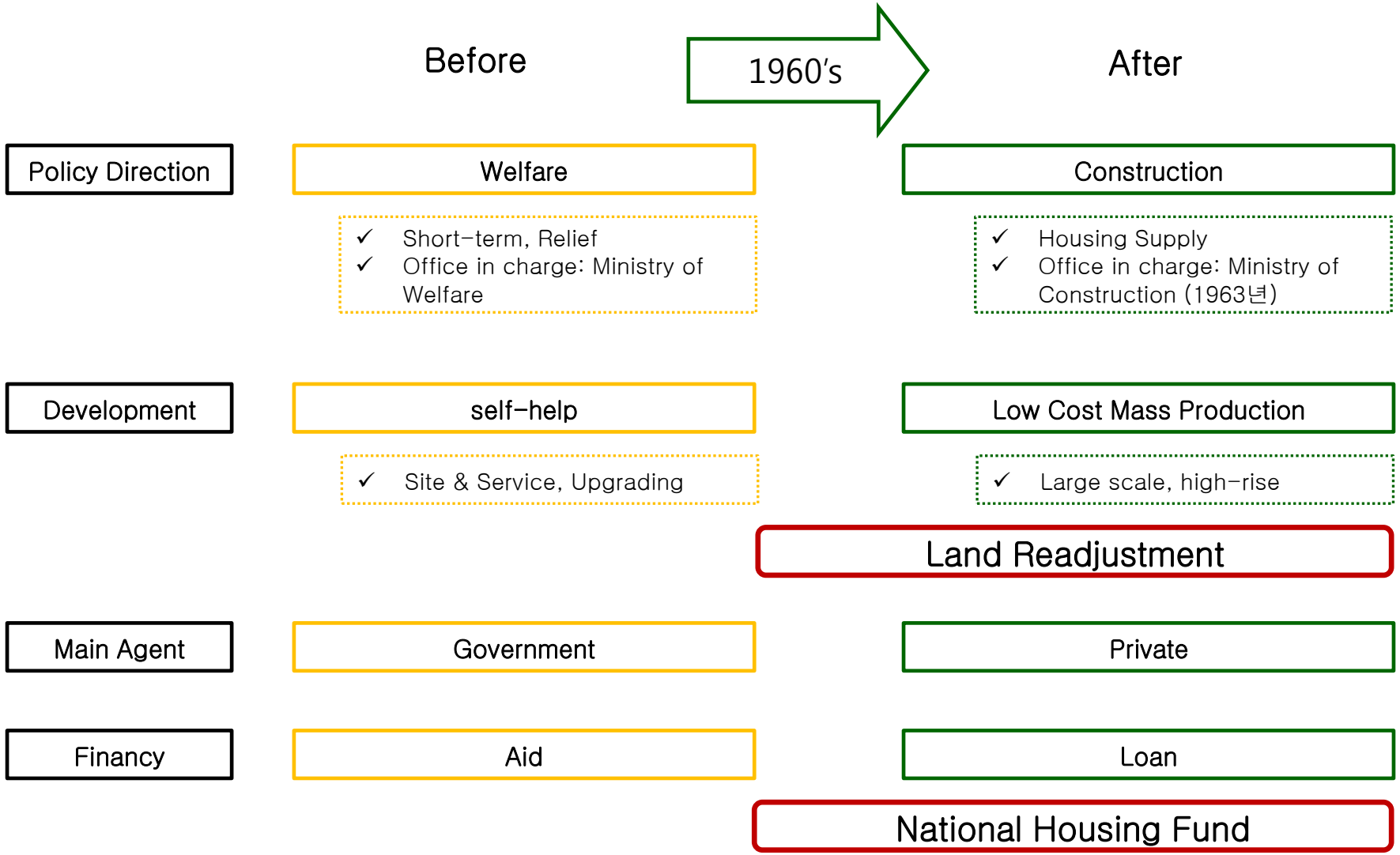
(existing housing shortage of 1M aside)

Problem #2: Land Consumption, Sprawl, Transportation, public service

CHANGE OF APPROACH

Paradigm Shift: Small Patch to Big Push

Size and Speed of Pop Growth changed Policy Direction



Spatial Pattern: Two ways to go

Uncontrolled Expansion
Market (individual freedom)

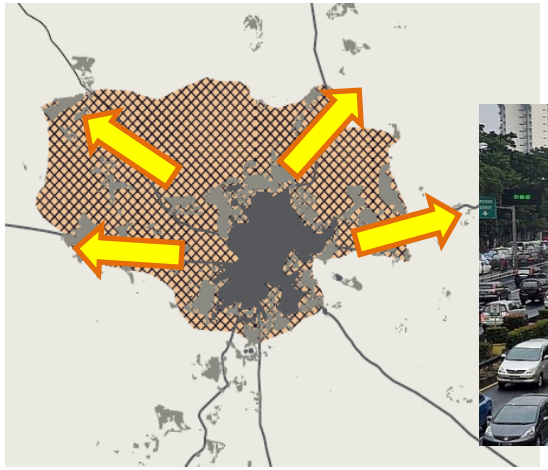
Low- or hyper-density
Large land consumption
and/or Inefficiency

Explosion of Pop.

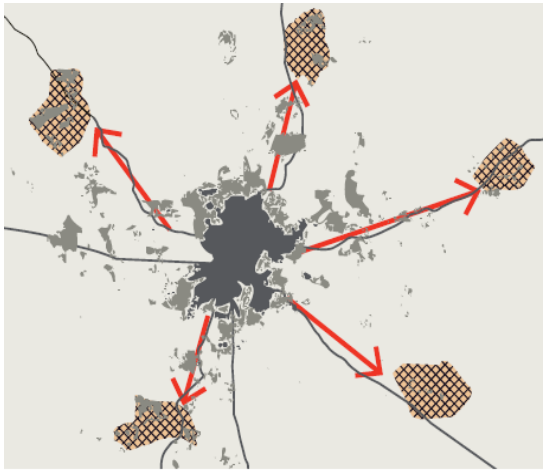
High-density
Small land consumption

Controlled Development
Planning + Market

Personal vs. Social Interest
Tension btw landlords vs. tenants
Tension btw selected vs. non-selected



Sprawl and/or Chaotic Over-crowd
Not sustainable

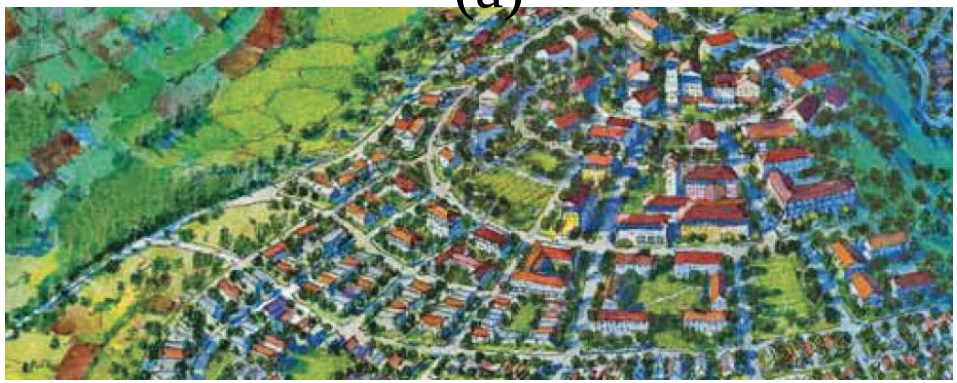


Figures from UN-HABITAT (2013)

Compact
Transit-Oriented
Eco-Friendly

Which one is greener?

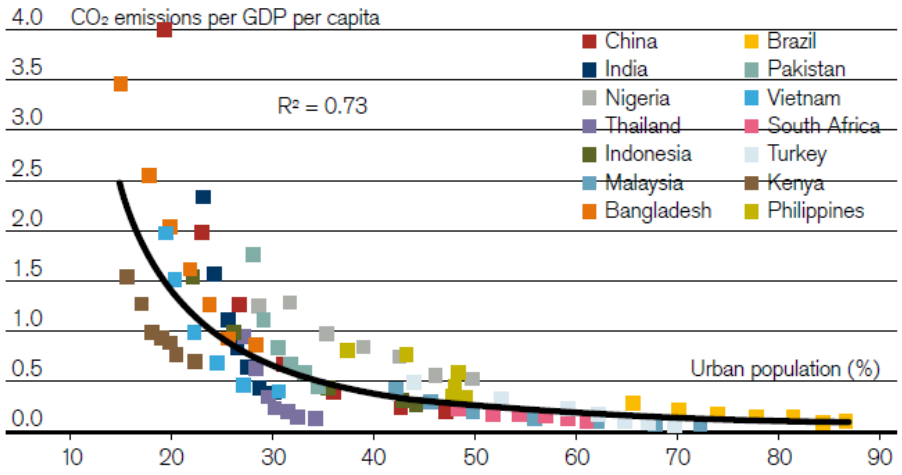
(a)



(b)

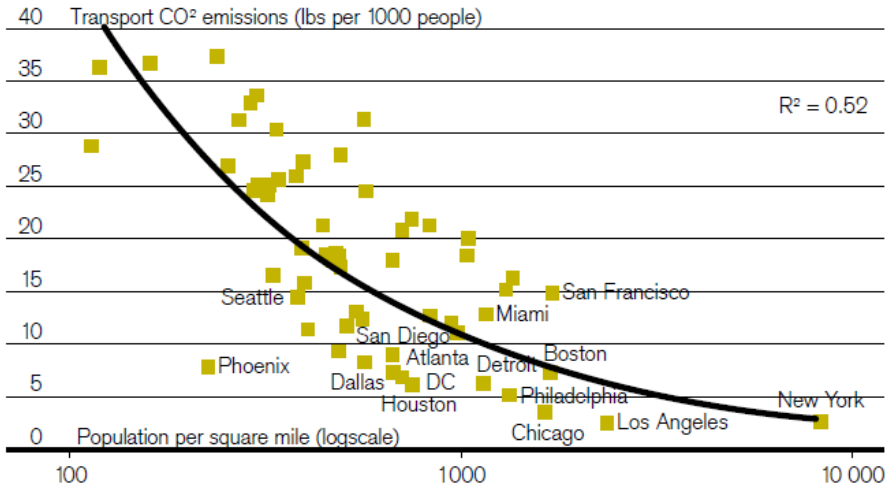
Total CO2 emissions versus urban population rate in emerging markets (1980–2010, 5-year intervals)

Source: World Bank Development Indicators, Population Division of Department of the Economic and Social Affairs of the United Nations Secretariat, Credit Suisse

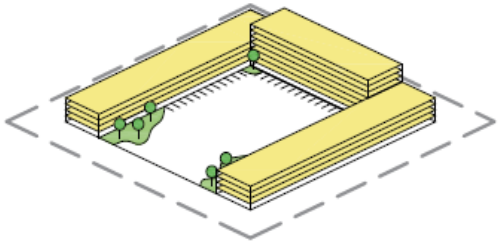


Emissions from transportation (public and private) versus population density for US metropolitan statistical areas

Source: US Census Bureau 2000 Census, Credit Suisse

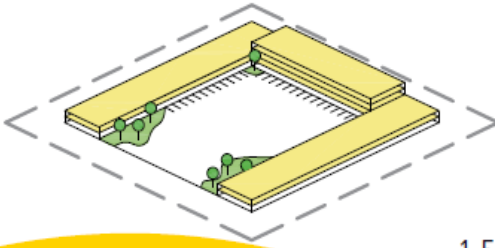


Population	1,000,000
Family size	5
Dwellings	200,000
Dwellings size	60m²
Residential Floor Area	12,000,000m²
Other Floor Area	10,000,000m²
Total Floor Area	22,000,000m²



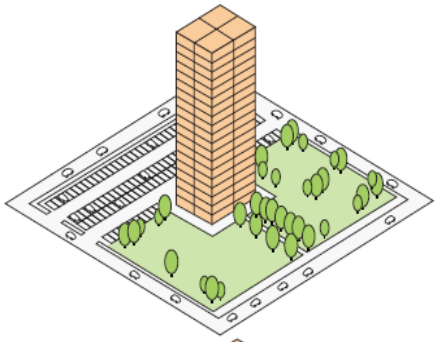
nario 1

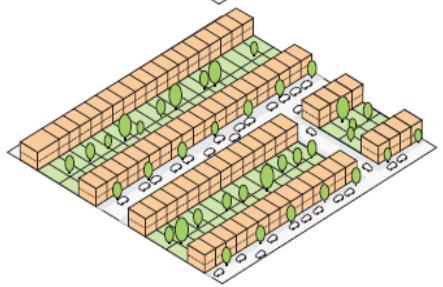
FAR	3.0
Plot Area	733 ha
Public Area	733 ha
Total Area	1,467 ha
Population Density	681,82 people/ha
Residential Density	136 dwellings/ha

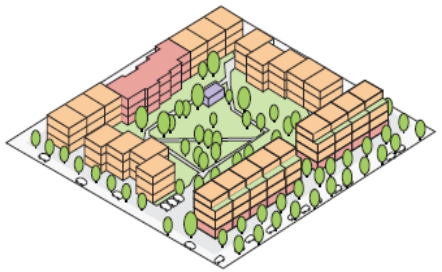


Scenario 2

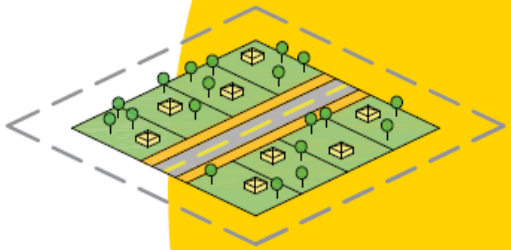
FAR	1.5
Plot Area	1,467 ha
Public Area	1,467 ha
Total Area	2,933 ha
Population Density	340,91 people/ha
Residential Density	68 dwellings/ha







ndez Per (2006), Density: New Collective Housing

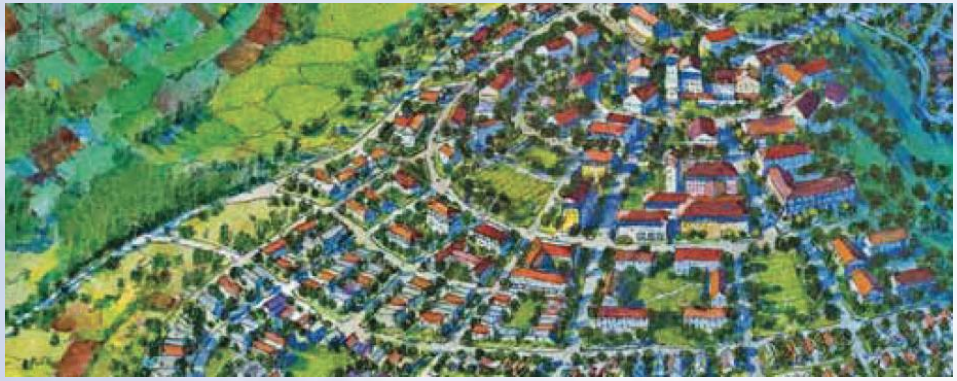


Scenario 3

FAR	0.2
Plot Area	11,000 ha
Public Area	11,000 ha
Total Area	22,000 ha
Population Density	45,45 people/ha
Residential Density	9 dwellings/ha

Source: UN-HABITAT (2013)

Invisible Beauty of Seoul: Green by "Proactive" Urban Planning



Walkable City

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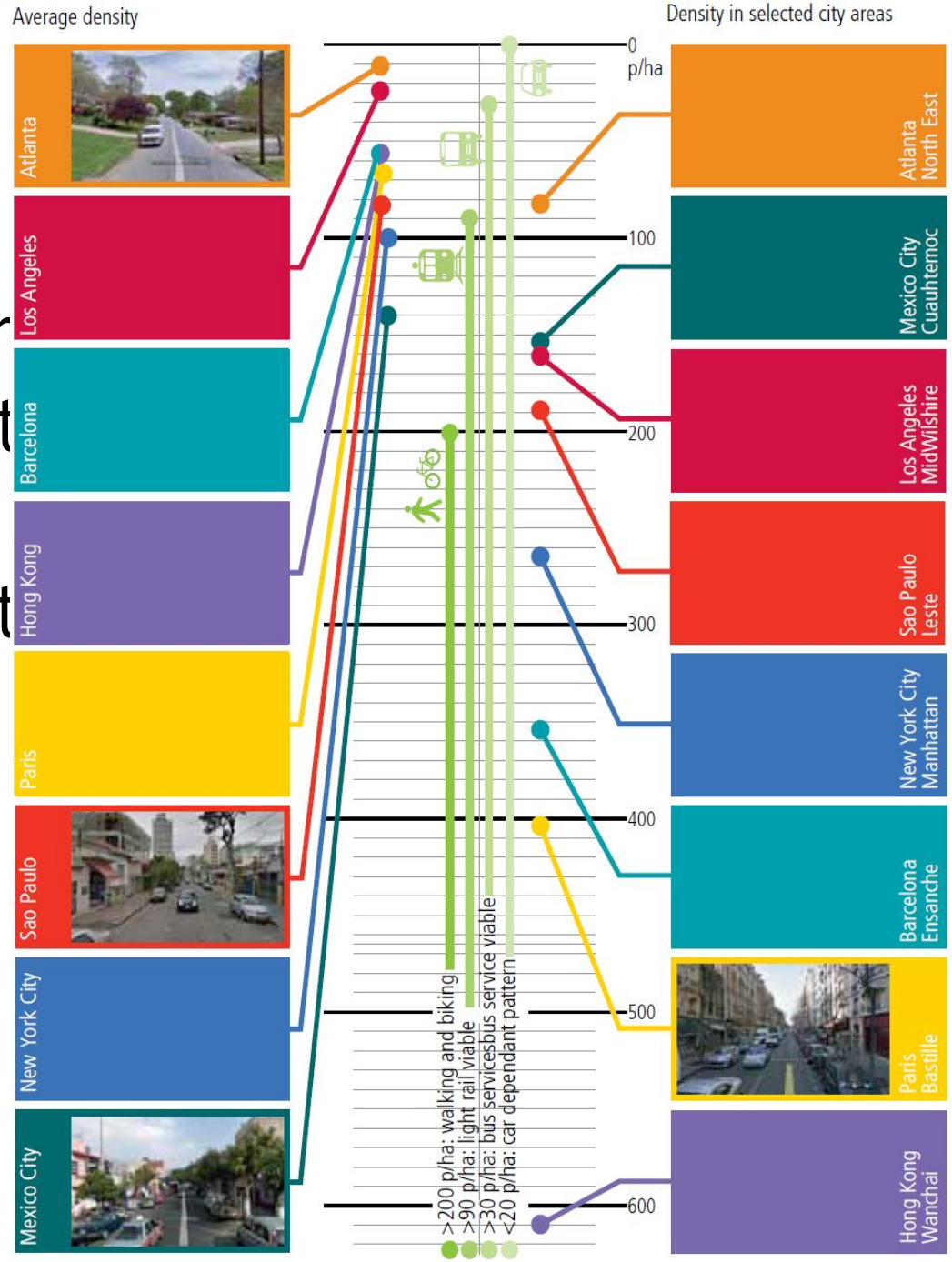
- t
- t

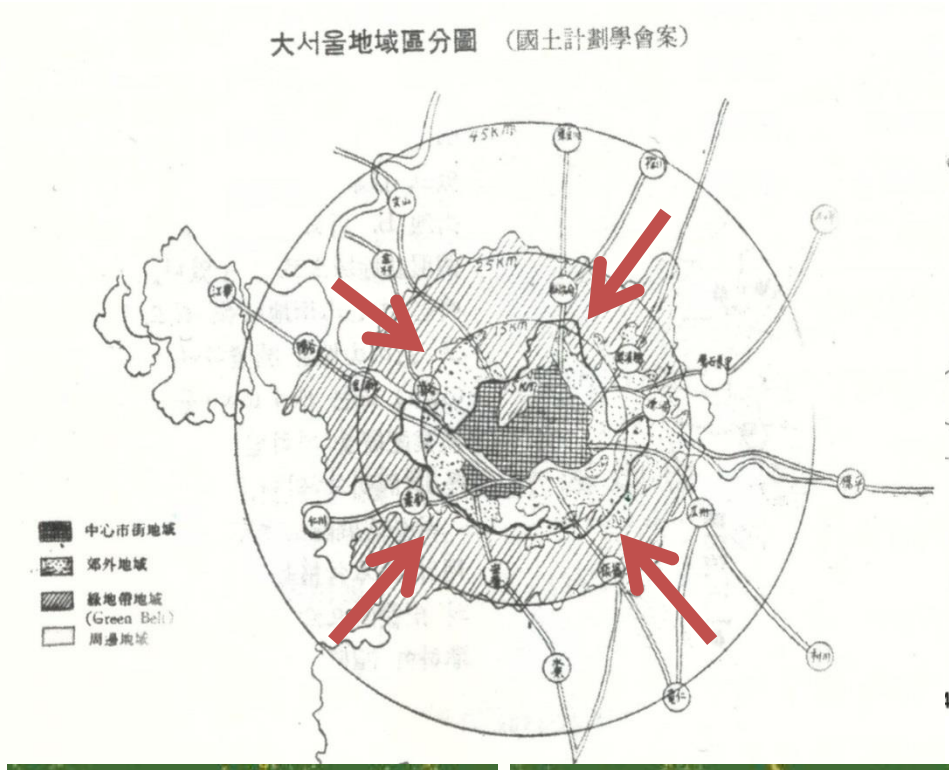


Source: UN-HABITAT (2013)

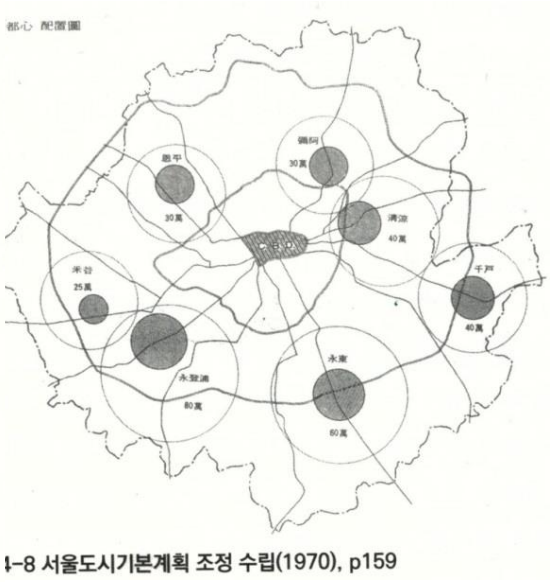
Making a plan for sustainable future development 1962-1965

MASTER PLAN 1980

Began with Urban Planning
Seoul Metro Area Master Plan (1965)

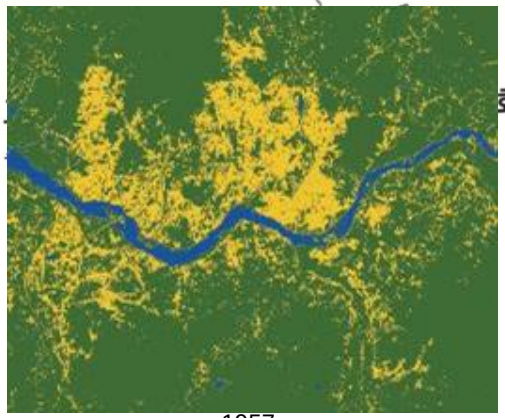


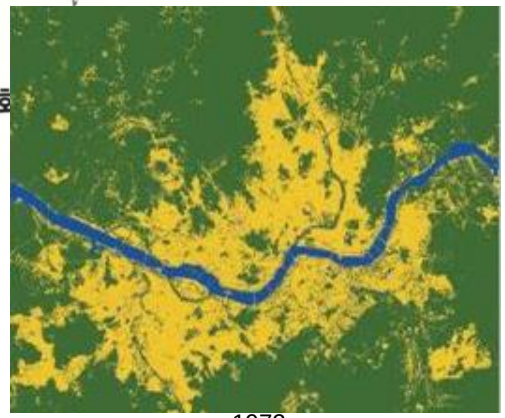
7 New Towns



1-8 서울도시기본계획 조정 수립(1970), p159

Visioning the ***future***:
Time, space, people, scope were not limited by then situation as was the future growth


1957


1972


1988


2005

7 New Towns

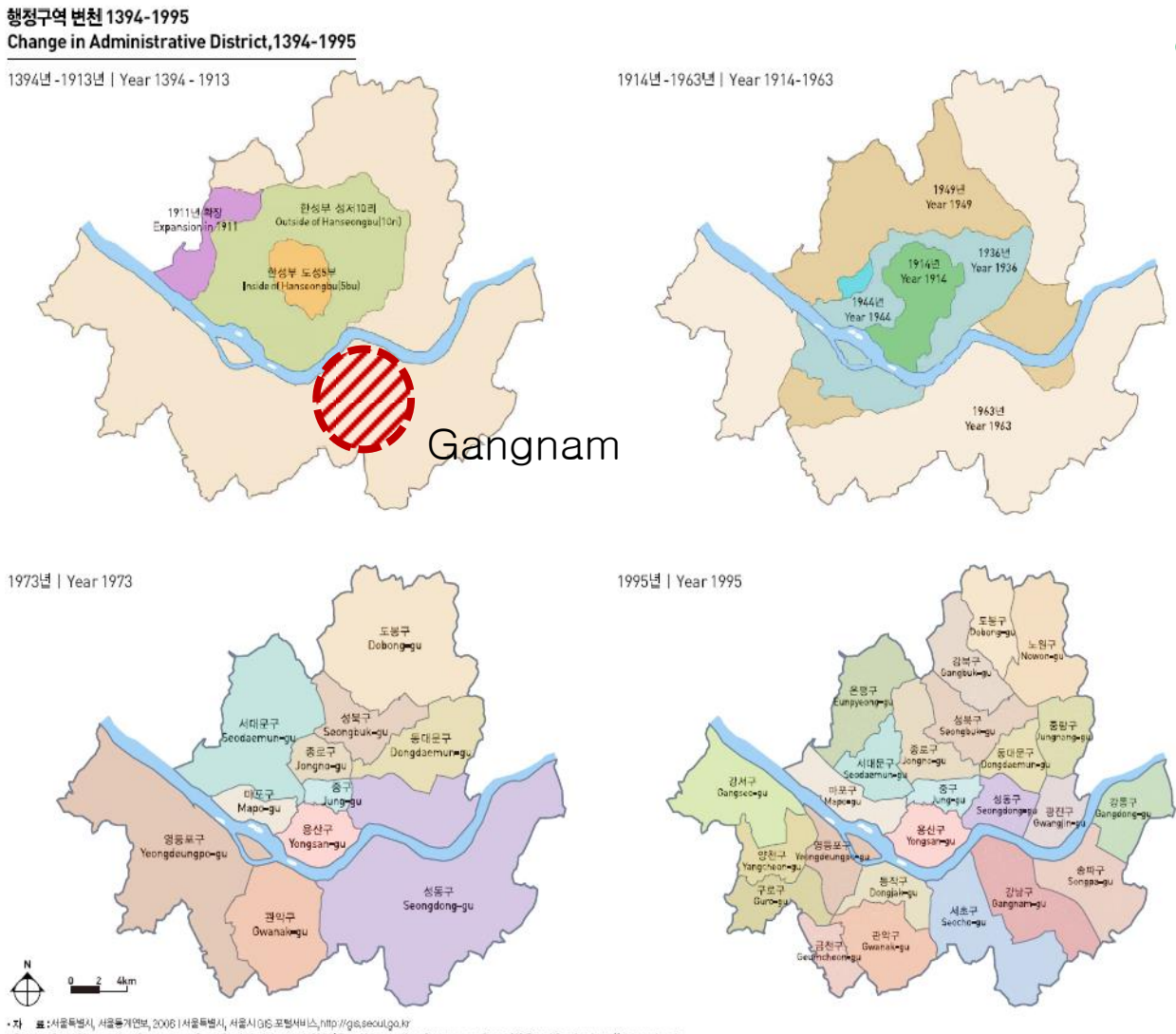
(unit: 1,000 persons, km^2)

Master Plan (1965)			Master Plan (Revised 1970)		Change
New Town	Pop. Plan	Area	New Town	Pop. Plan	
Eunpyung	400	7.6	Eunpyung	300	Down
Sungin	400	14.9	Miah	300	Down
Mangwoo	150	6.9	Cheongryangri	400	Up
Cheonho	300	8.6	Cheonho	400	Up
Yungdong (Gangnam)	600	59.0	Yungdong(Gangnam)	600	Same
Yungdungpo	800	8.6	Yungdungpo	800	Same
-	-	-	Gimpo	200	New
Total	2,650	105.7	Total	3,000	

Source: Kwon (2013)

Gangnam was a New Town outside Seoul

Expansion of Boundaries



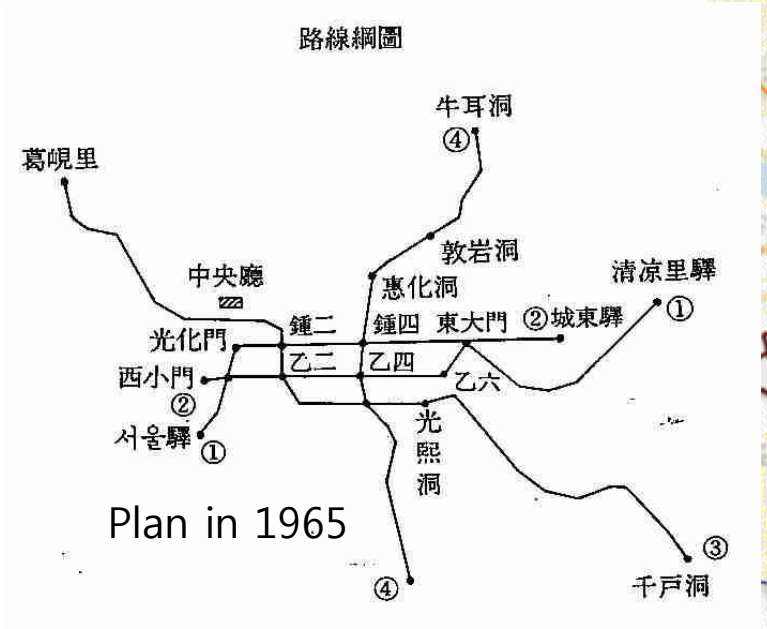
- 자 료 : 서울특별시, 서울통계연보, 2006 | 서울특별시, 서울시 GIS 포털서비스, http://gis.seoul.go.kr
- Source : Seoul Metropolitan Government, Seoul Statistical Yearbook 2006 | Seoul Metropolitan Government, Seoul GIS Portal Service, http://gis.seoul.go.kr

- Seoul doubled its administrative area in 1963 to resolve the urban problems, including southern area of Han river
  (In Korean, Gang means river and Nam means south)

Date	Area(㎢)
1946. 10. 18	136.00
1949. 08. 13	288.35
1963. 01. 01	613.04
1973. 07. 01	627.06
1988. 01. 01	605.40*

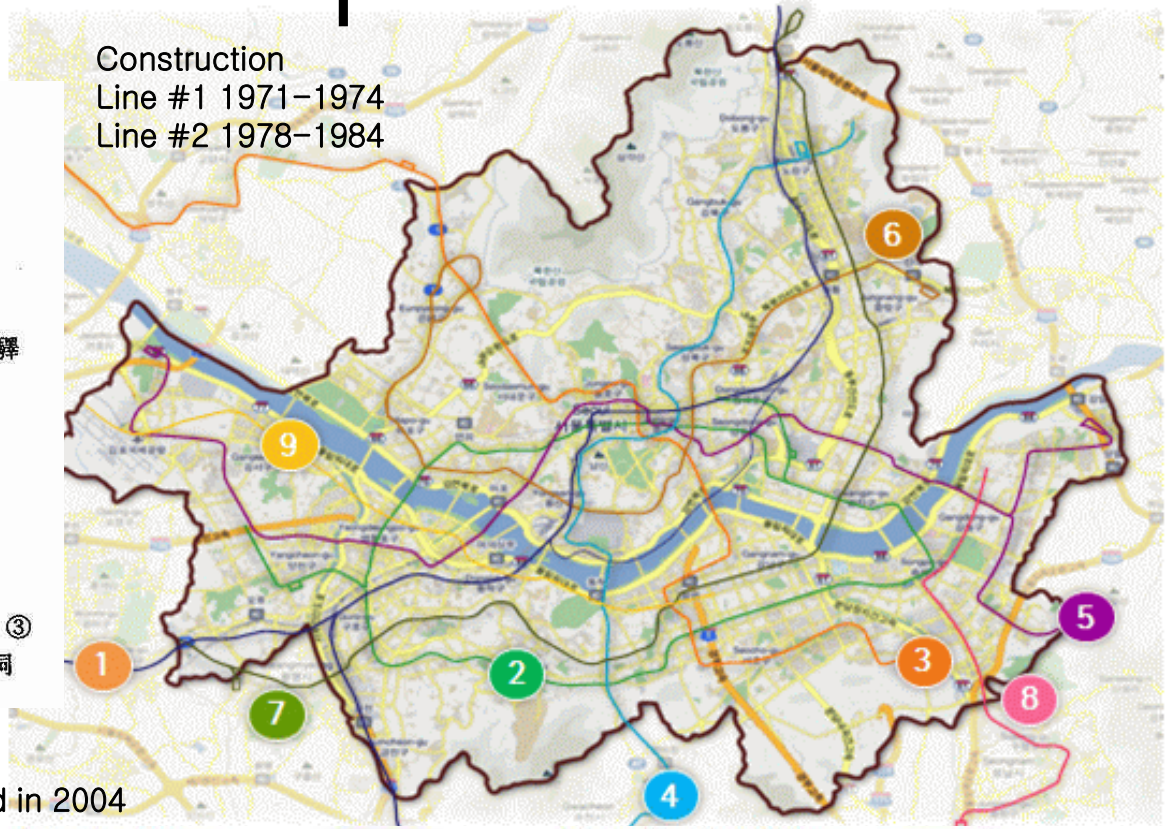
*the area did not shrink, but was merely readjusted by survey

Urban Transportation



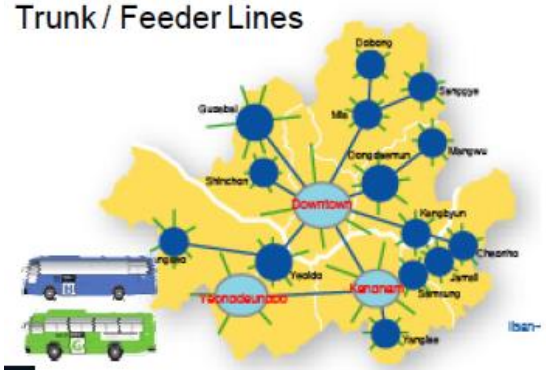
Plan in 1965

Construction
Line #1 1971-1974
Line #2 1978-1984

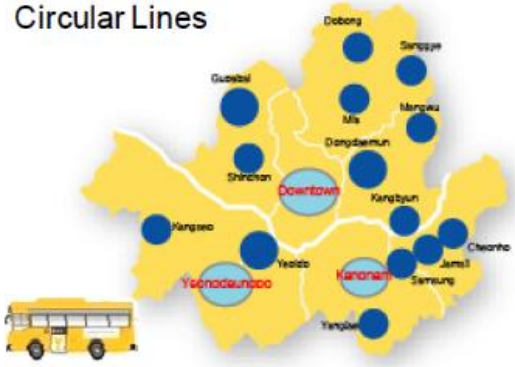


Bus Reform with Single-fare System launched in 2004

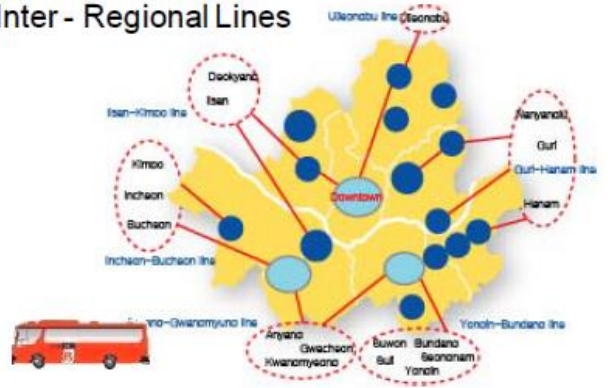
Trunk / Feeder Lines



Circular Lines



Inter - Regional Lines



Urban Environment
Transforming to Circular Metabolism - Nanji

1980's

2000's

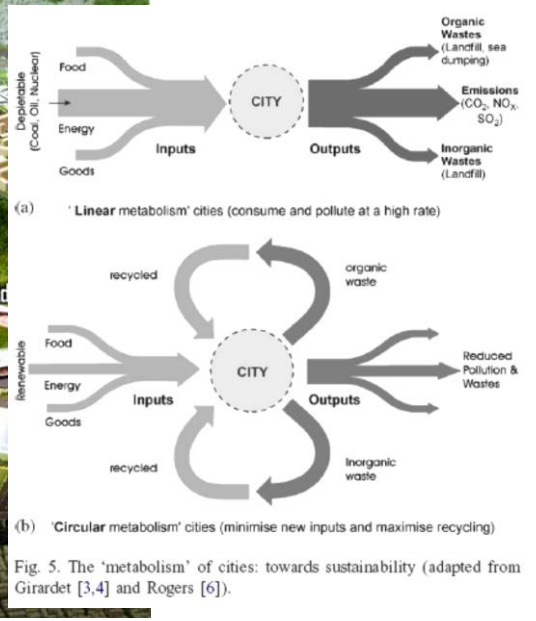


Fig. 5. The 'metabolism' of cities: towards sustainability (adapted from Girardet [3,4] and Rogers [6]).

Sewage → Gas → Purification → Electricity

Dry → Pallet

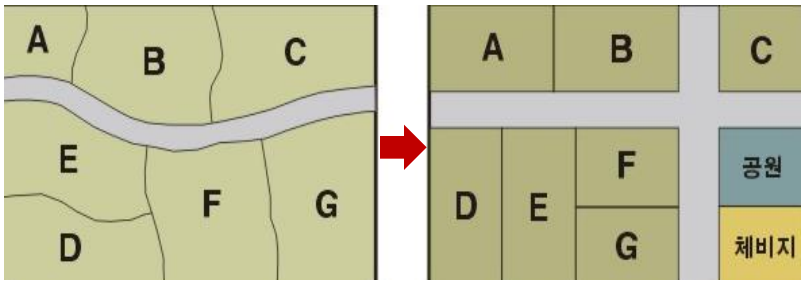
Land Readjustment and New Towns

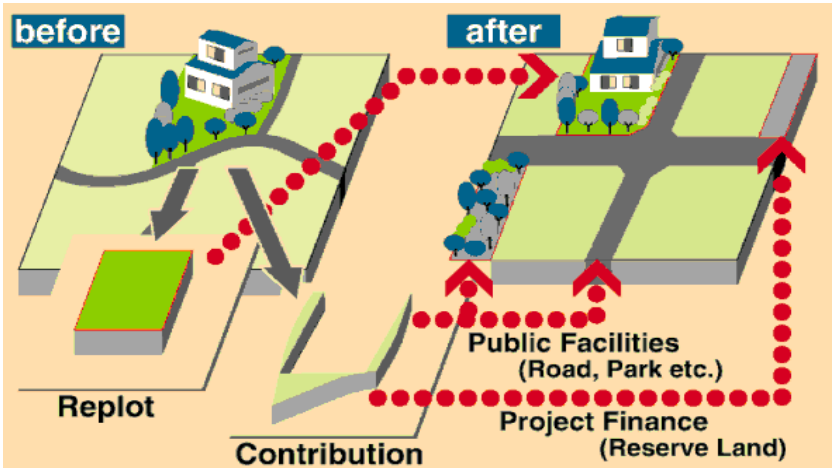
HOW TO REALIZE

Farmland Consolidation (FC), and we directly borrowed the idea and regulation of FC for urban LR. Specifically FC tries to make ① one side of the rice paddy should be road accessible so the produce can be distributed easily, ② the size and shape of the divided sections should be properly set-up for the efficient use of farm machinery, ③ the rice paddy should be dried easily for the effective use of farm machinery, ④ every section should be accessible through irrigation/drainage canals, ⑤ consolidate fragmented or scatted farm lands into a larger one.

① FC improved the productivity of farmland because farmland could get a sufficient and stable water supply from irrigation system and a good accessibility from roads and their link of farm land, ② FC decreased the need of labor input, partly thanks to labor efficiency with more machinery, which lead to free up labors for other economic activities, ③ FC built a protection against flood and natural disasters, ④ FC brought indirect effects including the enhancement of farmers' hope and desire for better life and public interests in environmental conservation and prevention of natural disasters. For example productivity had increased by 5.4 %, labor decreased by 32.8 %, production cost decreased by 14.3 % (Korea Government, 1999).

Land Readjustment: Transforming Land Valuable
Build Together, Benefit Together (BT2)

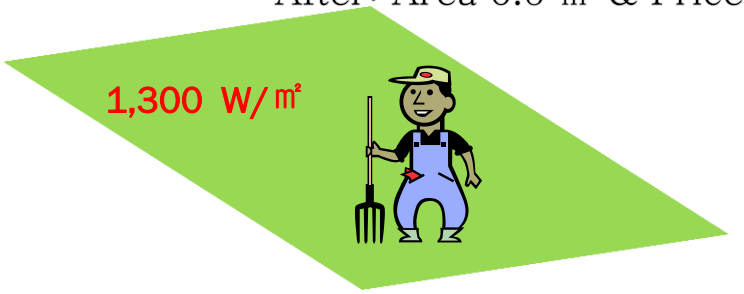


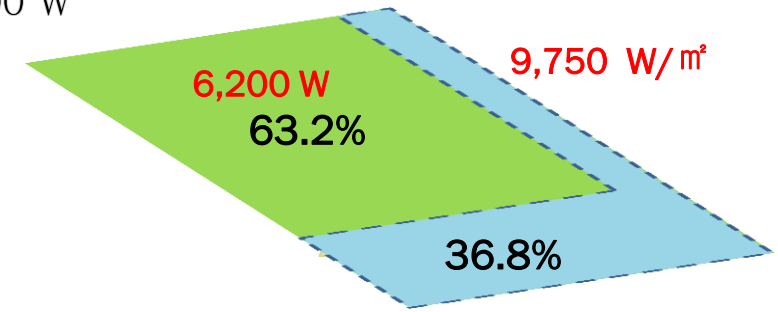


Before
Gangnam Average
Land Price 1,300 W/㎡

After
Price increased by 7.5 times
to 9,750 W/ ㎡

Land Owner
Before: Area 1㎡ & Price 1,300 W
After: Area 0.6 ㎡ & Price 6,200 W

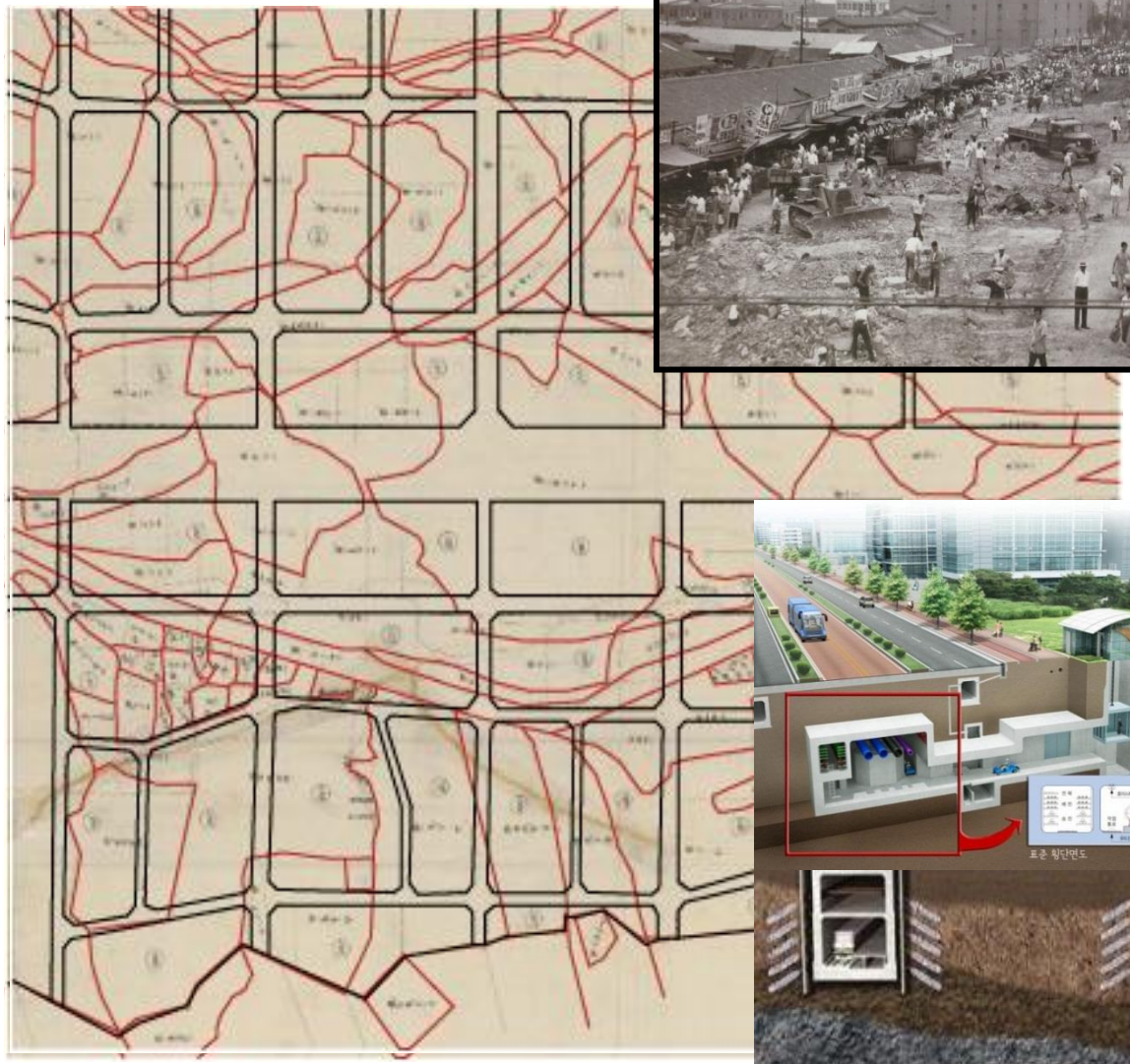




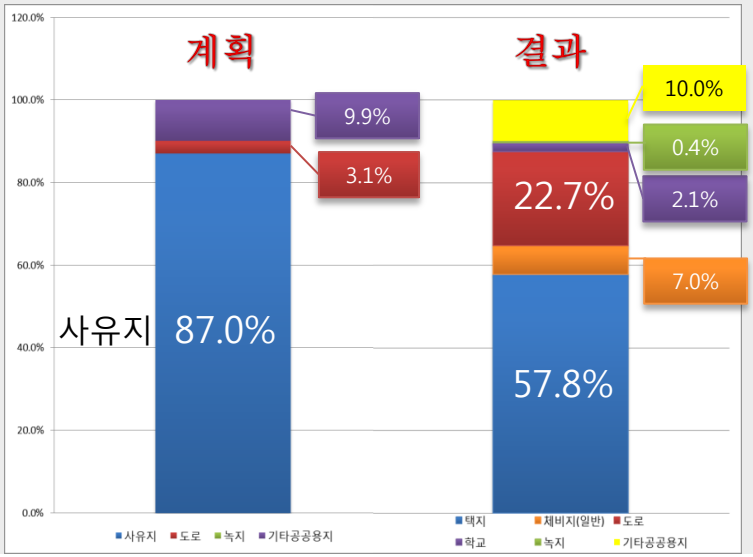
Transforming Land into Sustainable Urban Land

Road **is not only surface for cars but also artery (public space for public services) for a city.**

Water,
Sewage
Energy , Gas,
Electricity
Communication
Heat, Cooling,
Subway, etc.



Securing Public Space and Change Spatial Structure (without money and compulsory displacement)



Land Use

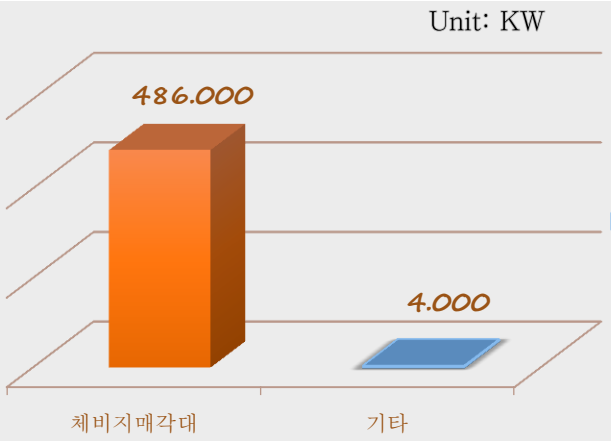
- Residential 57.8%p
- Re-sale (private) 7.0%p

사유지 64.8%p
12.2%p 감소 ↘

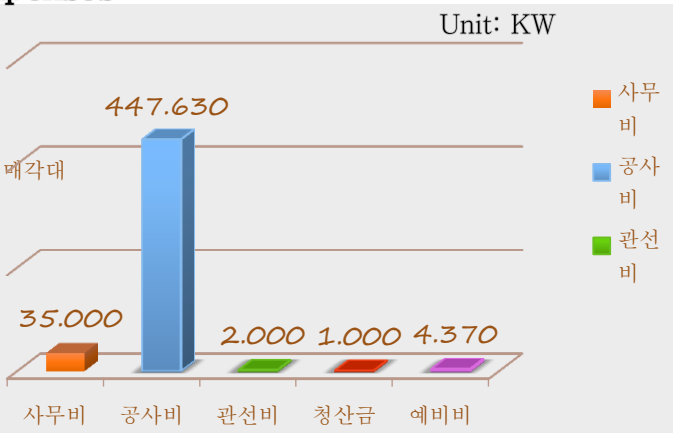
- Road 22.7%p
- School 2.1%p
- Green 0.4%p
- Etc. 10.0%p

Contribution Rate: 34.4%

Income



Expenses



* 체 비 지 매 각 대 로 충 당

How? Urban Big Agreement - Land Readjustment

Contribution Rate

▼강남토지구획정리 사업내역

% of Land Sold

Contribution Rate (%)

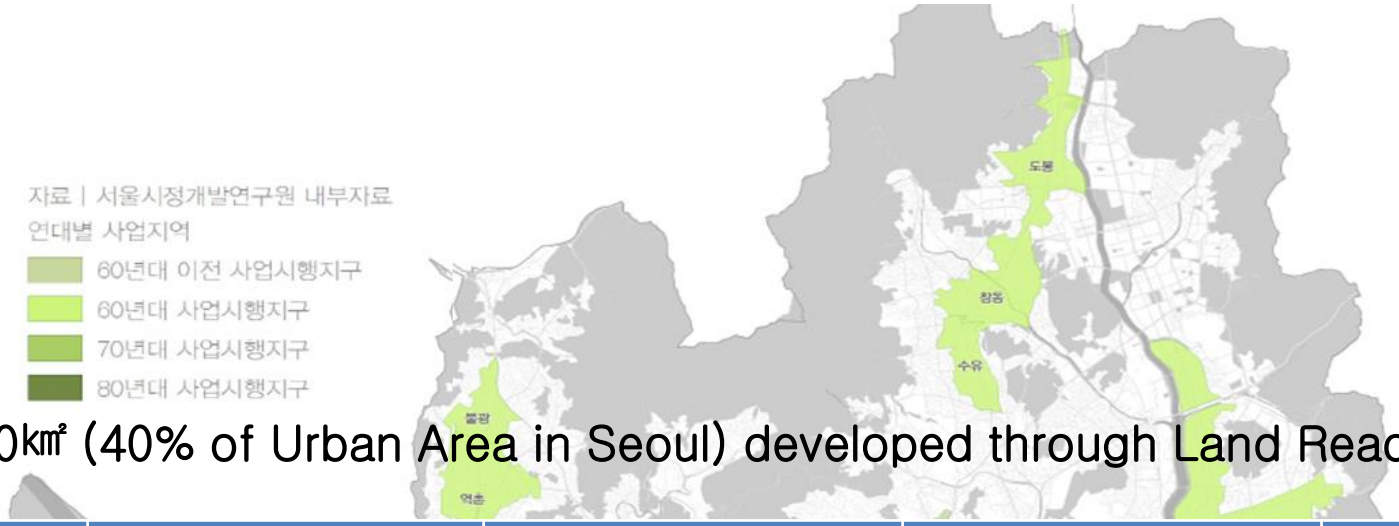
지구	시행인가일 시행완료일	시행면적 (㎡)	토지이용현황(㎡, %)								사업비 면적 (원)	감보율 (%)
			체비지	택 지	일반공공시설용지					공공 용지합		
					시 장	학 교	도 로	공 원	기 타			
영동1	1968.1 1990.12	12,737,831	701,830	6,715,053	112,985	700,532	2,945,372	221,980	1,340,079	5,320,948		39.1
			5.5	52.7	0.9	5.5	23.1	1.4	10.5	41.8	37	
영동1	1971.8 1991	13,071,858	1,985,061	7,531,772	31,074	95,868	3,050,235	114,149	263,699	3,555,025		36.8
			15.2	57.6	0.2	0.7	23.3	0.9	2.0	27.2	81	
잠실	1974.12 1986.12	11,223,191	1,805,175	4,812,932		440,826	1,662,681	170,456	2,331,121	4,605,084		52.9
			16.1	42.9		3.9	14.8	1.5	20.8	41.0	90	
영동1 추가	1971.12 1984.9	991,736	71,976	603,989	3,306	62,810	223,587	5,950	20,118	315,771		39.8
			7.3	60.9	0.3	6.3	22.5	0.6	2.0	31.8	99	
영동2 추가	1974.3 1982.9	85,369	17,977	48,716			17,684	992		18,646		39.5
			21.1	57.1			20.7	1.2		21.9	1,084	
개포3	1982.2 1988.12	6,491,289	621,240	1,837,765	550,552	428,790	1,185,276	767,656	1,100,010	4,032,284		57.4
			9.6	28.3	8.5	6.6	18.3	11.8	16.9	62.1	19,754	
가락	1982.3 1988.12	7,455,066	1,589,284	1,343,121	137,582	407,440	1,545,024	466,055	1,966,560	4,522,661		68.3
			21.3	18.0	1.8	5.5	20.7	6.3	26.4	60.7	15,151	
양재	1983.11 1986.12	154,664	29,844	76,441	3,239		28,433	13,871	2,836	48,379		43.1
			19.3	49.4	2.1		18.4	9.0	1.8	31.3	33,28	
이수	1972.2 1981.12	2,028,277	439,104	1,119,617	13,223	23,827	402,368	22,092	8,046	469,556		39.4
			21.6	55.2	0.7	1.2	19.8	1.1	0.4	23.2	394	
이수 추가	1981.4 1985.6	76,606	18,212	25,702			29,299	3,395		32,694		53.3
			23.8	33.6			38.2	4.4		42.7	23,917	
강남전역		54,315,889	13.5	44.4	1.5	4.0	20.4	3.3	12.9	42.1	5,137	
*전국		140,019,379	10.4	51.5	0.9	2.4	20.1	1.7	7.6	34.6	2,449	

자료: 서울시 도시계획과

주: 1960년 이후 전국 토지구획정리구역의 총합

- Contribution Rate ranges from 39.1% to 68.3%
- Rate of Land for Sale (part of contribution) was 13.5% on average
- Revenue from land sale was a key public financial resources for infrastructures and development
- public infrastructure and facilities can be located in right places

출처:이옥희(2006), 서울 강남지역 개발과정의 특성과 문제점, 한국도시지리학회지



- 140㎢ (40% of Urban Area in Seoul) developed through Land Readjustment

	Sum		By Gov't		By Association		By Housing Corp	
	No of Sites	Area(㎢)	No of Sites	Area(㎢)	No of Sites	Area(㎢)	No of Sites	Area(㎢)
Sum	58	140	51	131.2	4	5.8	3	3

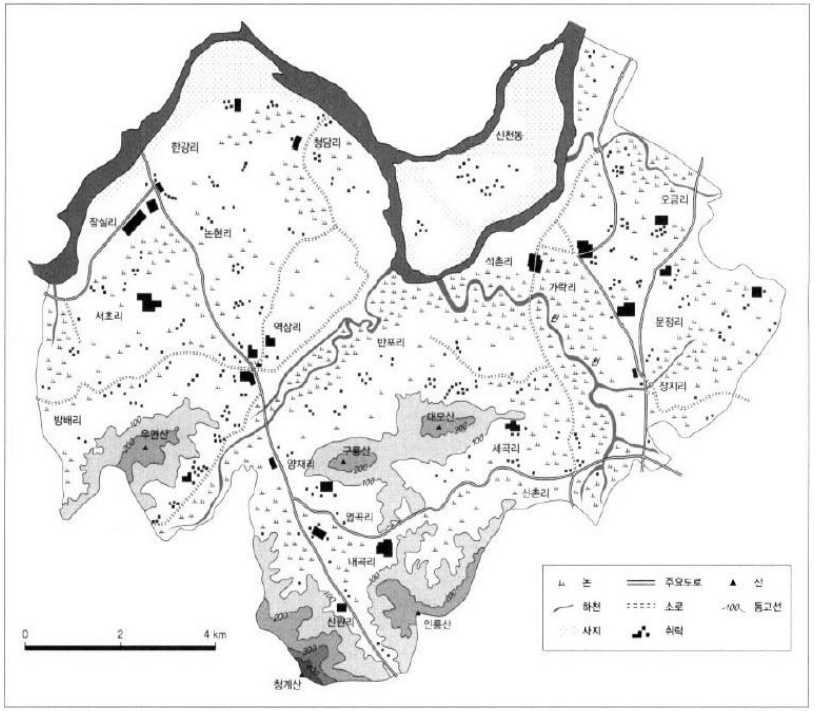
unit : year

	1930's	1940's	1950's	1960's	1970's	1980's	1990's	Avg
Avg	19.8	19.4	13.8	7.0	6.2	6.3	4.4	7.4
Public	19.8	19.4	13.8	7.0	6.5	6.3	4.2	8.3
Assoc.				5.7	5.6	6.8	4.5	5.6

출처 : 토지구획 정리사업의 고찰과 개선방안, 김동욱, 국토연구원
자료 : 건설교통부 도시관리과(1995. 6. 현재)

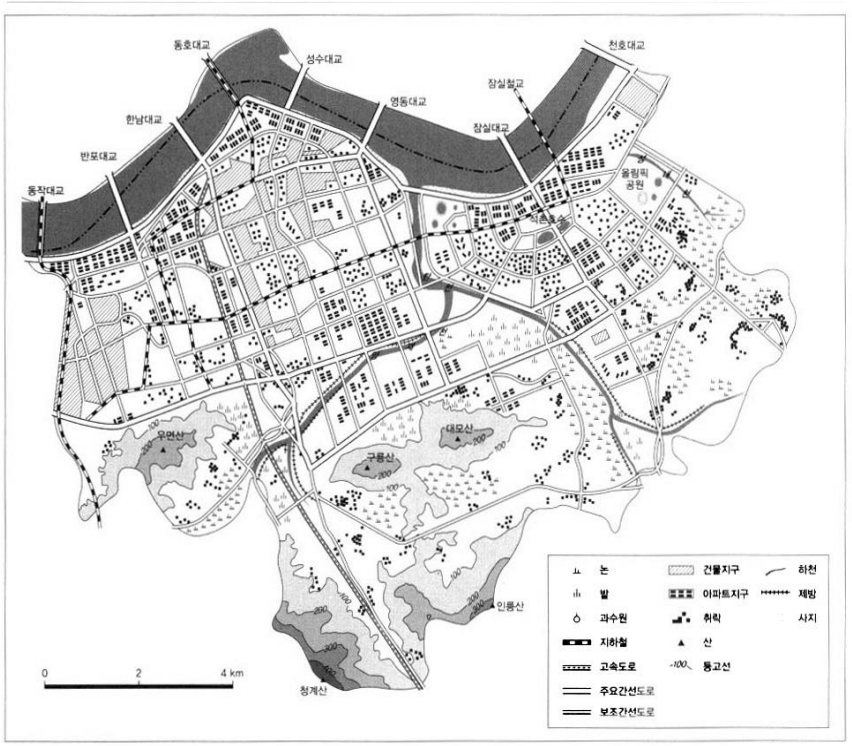
Gangnam Development

- **Envisioning vs. Forecasting**
- 30 years of development from an idea to completion



출처 : 1957년 미육군극동지도국에서 작성한 「서울」, 「독도」 1:10만 도폭에서 재작성

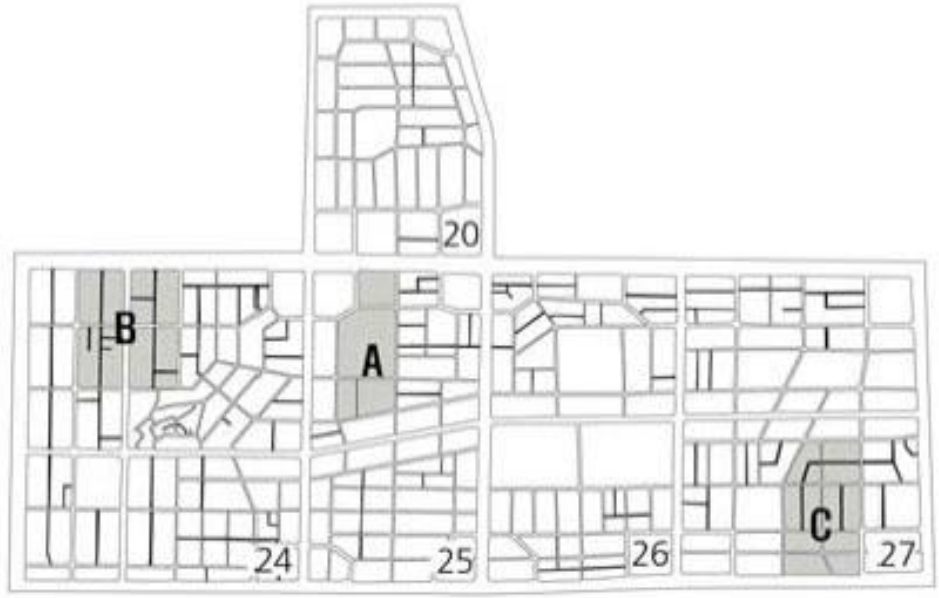
▲ 강남 1957년

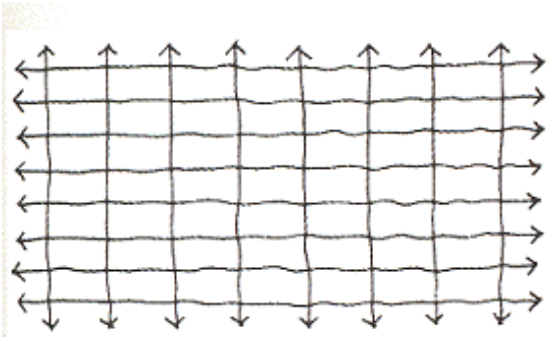


▲ 강남 1988년

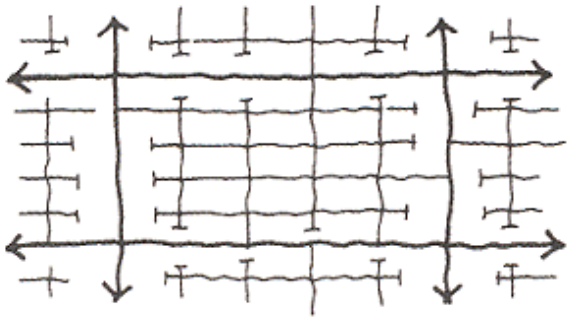
Source: Lee (200

Grid is important

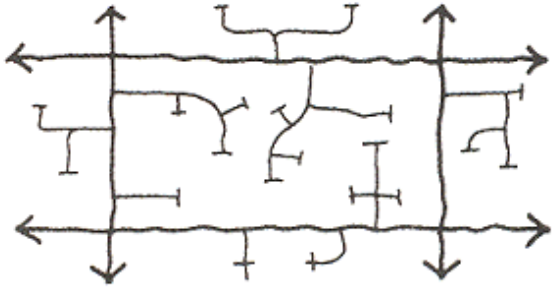




격자 가로 체계

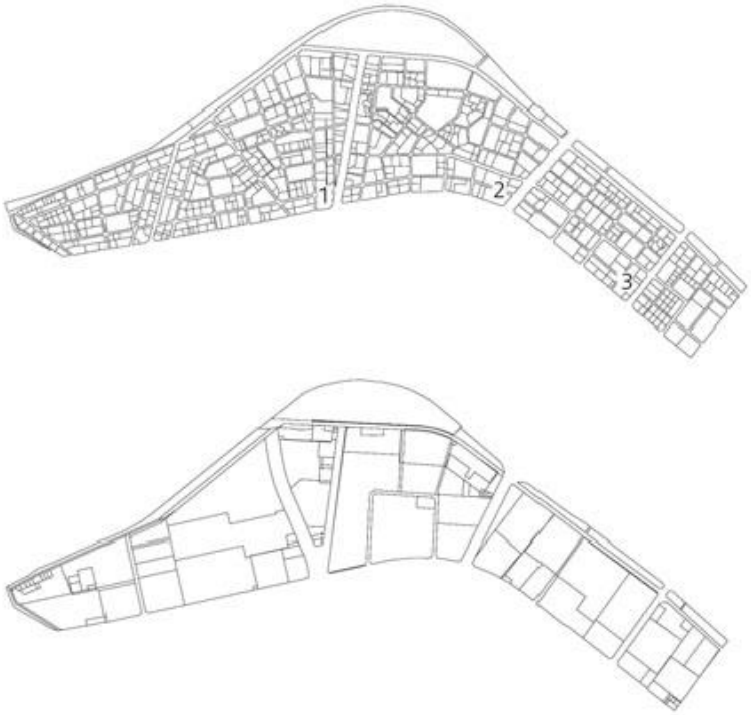


격자 침식의 과정



사다리 가로 체계

Consolidate or Co-development



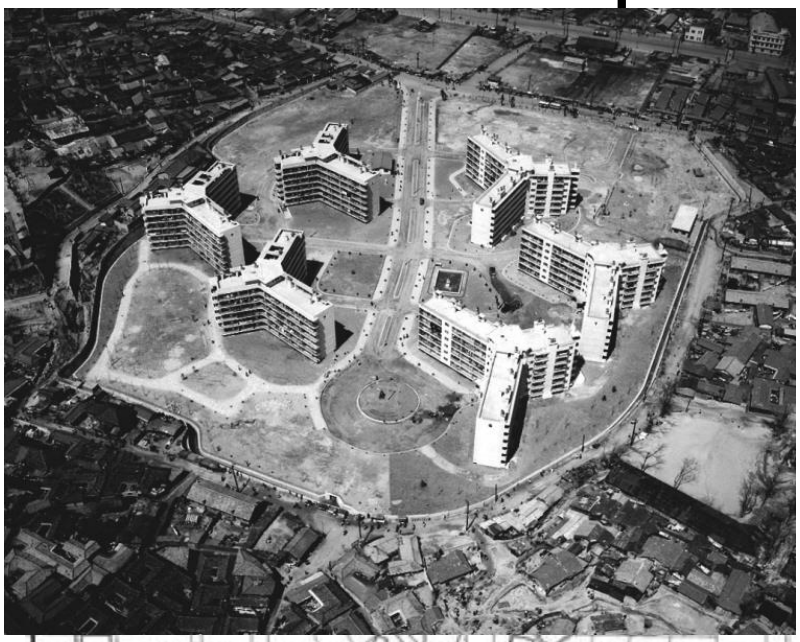
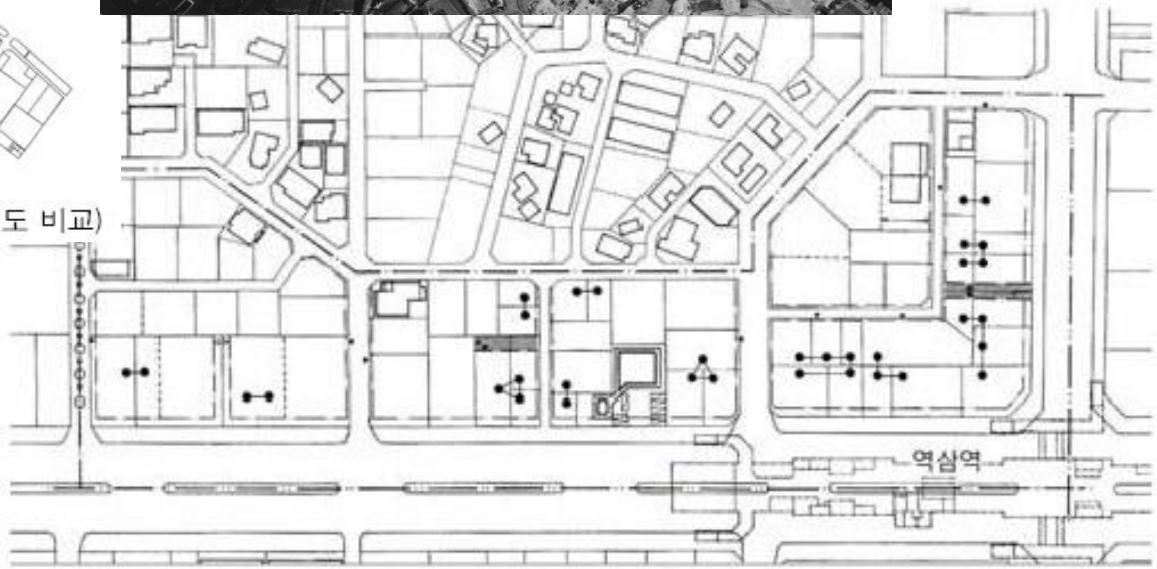


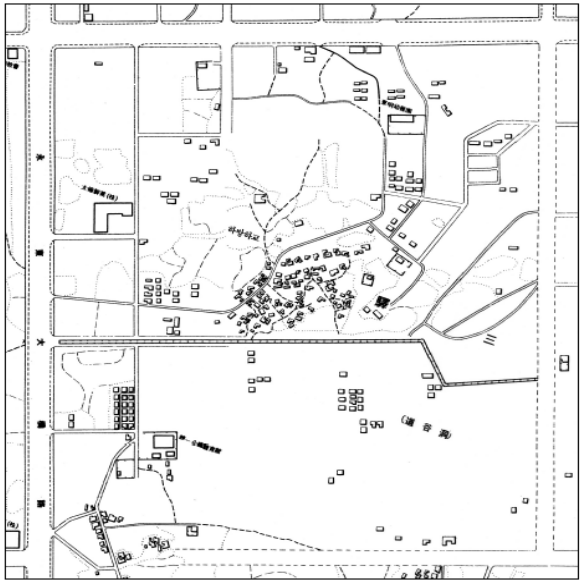
그림 4. 블록 1, 2, 3, 4의 합필화 (1974년과 2010년 지적도 비교)



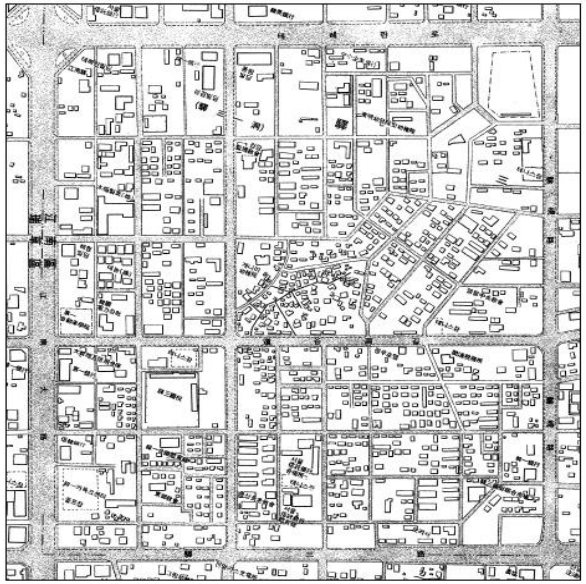
Government Planning and Private Development

Urban Planning: Vision, Framework and Process

1976년



1987년



1995

출처:서울연구원 (2009)

1972년

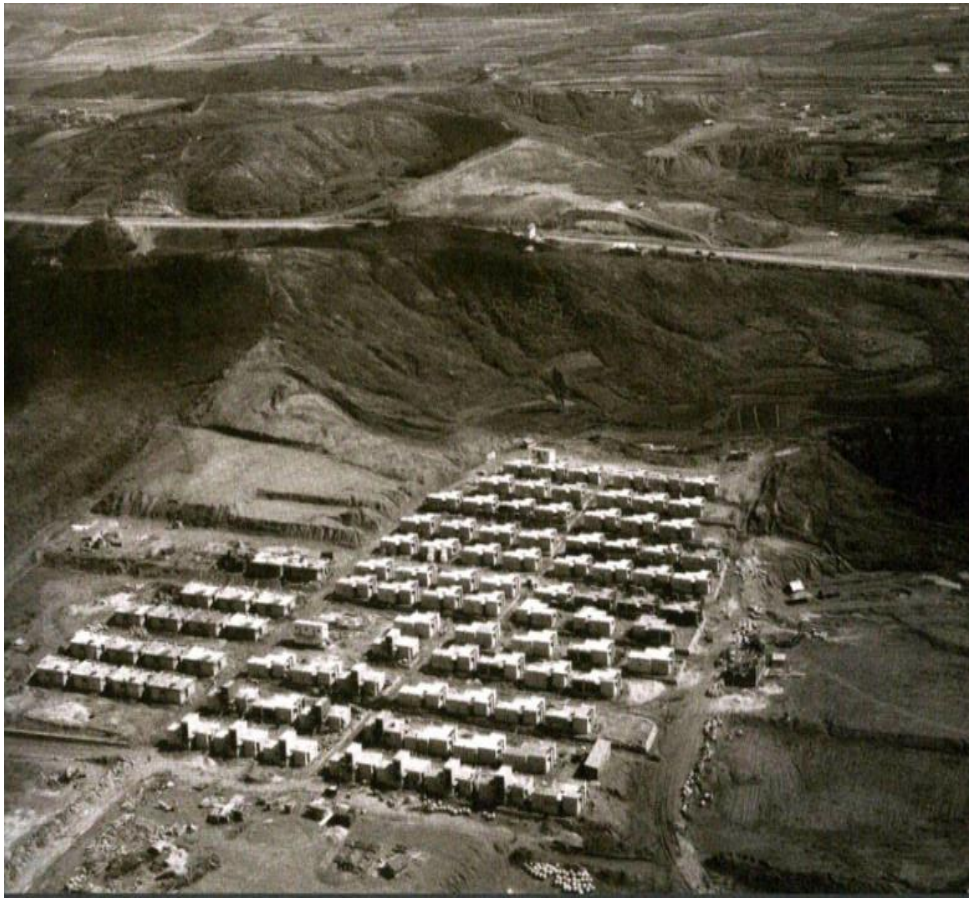
1980년

1988

출처:서울시 (2013)

Gangnam Development

Phasing Issues due to Financing

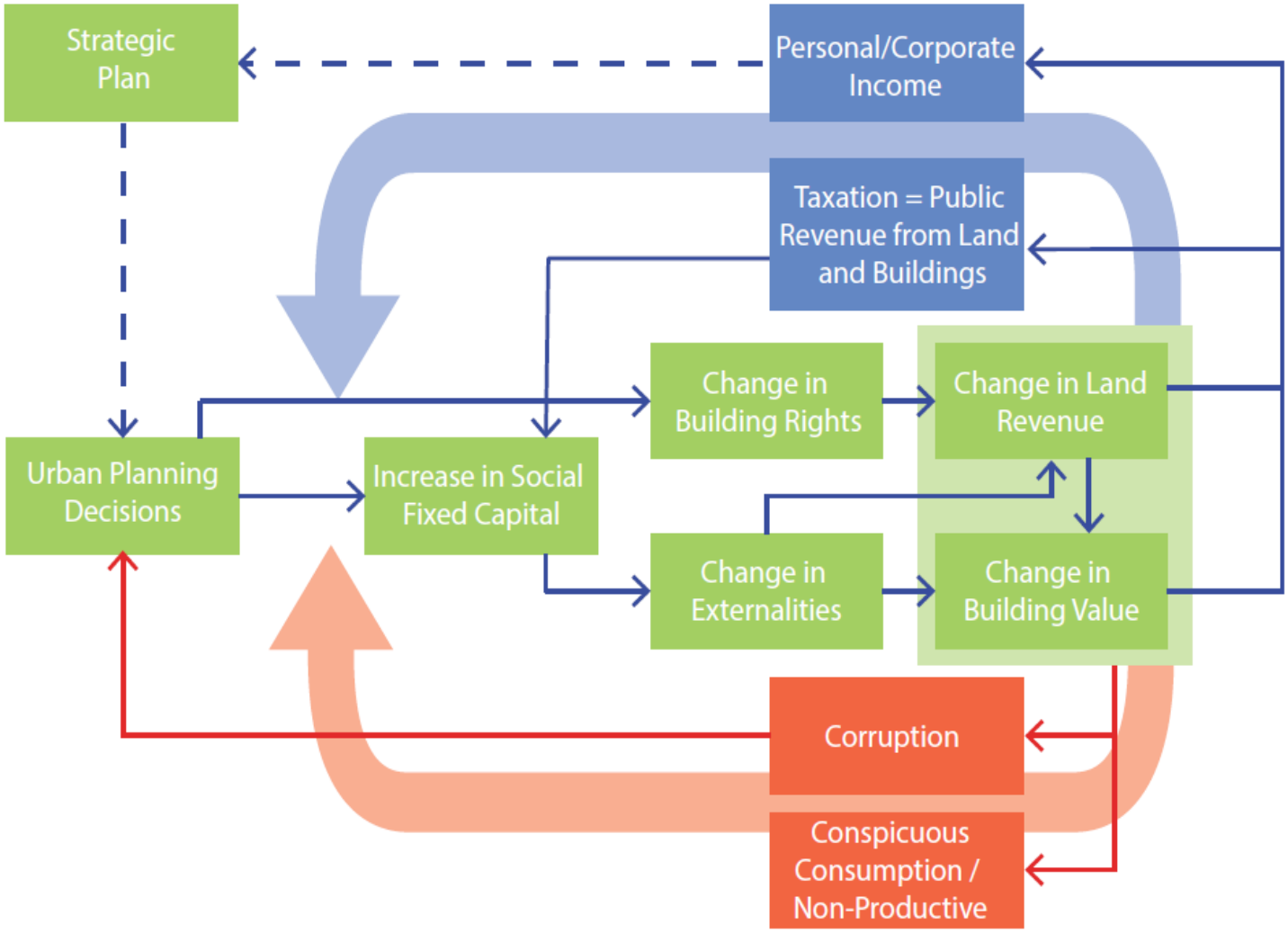


▲ AID아파트 미국 국제개발처(AID)자금을 들여와 논현동과 삼성동에 아파트를 지어 분양함

▲1971. 12. 28 공무원아파트 준공(자료 : 국가기록원)

사진출처: 서울역사박물관, 2011, 강남 40년 영동에서 강남으

Virtuous/Vicious Cycle of Land Value Creation



Source: UN-HABITAT (2013)

Source: adapted from Roberto Camagni

Achievements

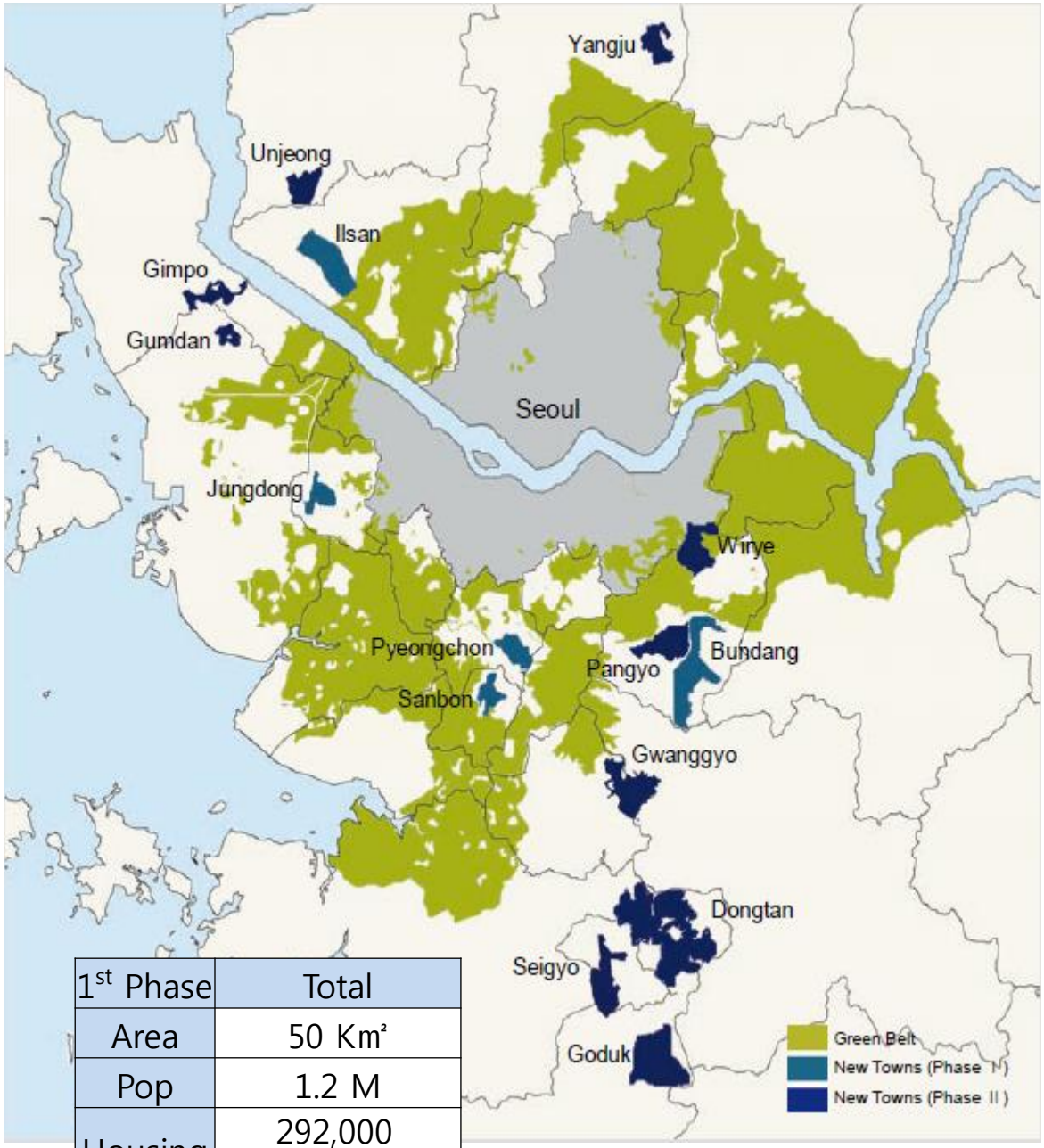
- Set *Land Use Framework* as the Ground of Future Growth
- Secure *Public Space* for *Public Services* (e.g., Transit, Water)
- Set *Growth Limit* for Protecting Nature from Sprawl and Citizens from Disasters (e.g., Flood)
- Provide *Urban Land and Infrastructures* for the Life, Work, and Play of Citizens

Pop in 1960: 2.45 M

	1970	1976	1981
Population (Thousand)	5,509	7,150	7,500
Income per cap (KRW)	138,810	189,580	268,240
Urban Land (㎢)	**130**	**201.7**	**261.7**
Housing (Unit)	593,370	863,970	1,300,000
Hosing Supply Rate (%)	56.8	56.3	56.1
Housing Area per cap (㎡)	**6.8**	**8.2**	**10.1**
Water Prod (10T t/day)	111	210	302
Road Area (㎢)	**34.85**	**44.57**	**55.69**
Road Rate (%)	**9.5**	**12.0**	**15.0**
No. of Cars	61,000	170,000	315,000
Subway (km)	-	26.5	64.0
Green/Park per cap (㎡)	**4.04**	**5.73**	**6.60**

5 New Towns in 1990's

In the late 1980s, as the situation of housing shortages became worse and the existing available land for large-scale urban development was nearly exhausted, the population began to spillover beyond the green belt.
Faced with limitations in land supply for urban development, the central government began to build several new towns in the Seoul Metropolitan Region including Bundang in Sungnam, Ilsan in Goyang, Pyeongchon in Anyang, Sanbon in Gunpo, and Jungdong in Bucheon.



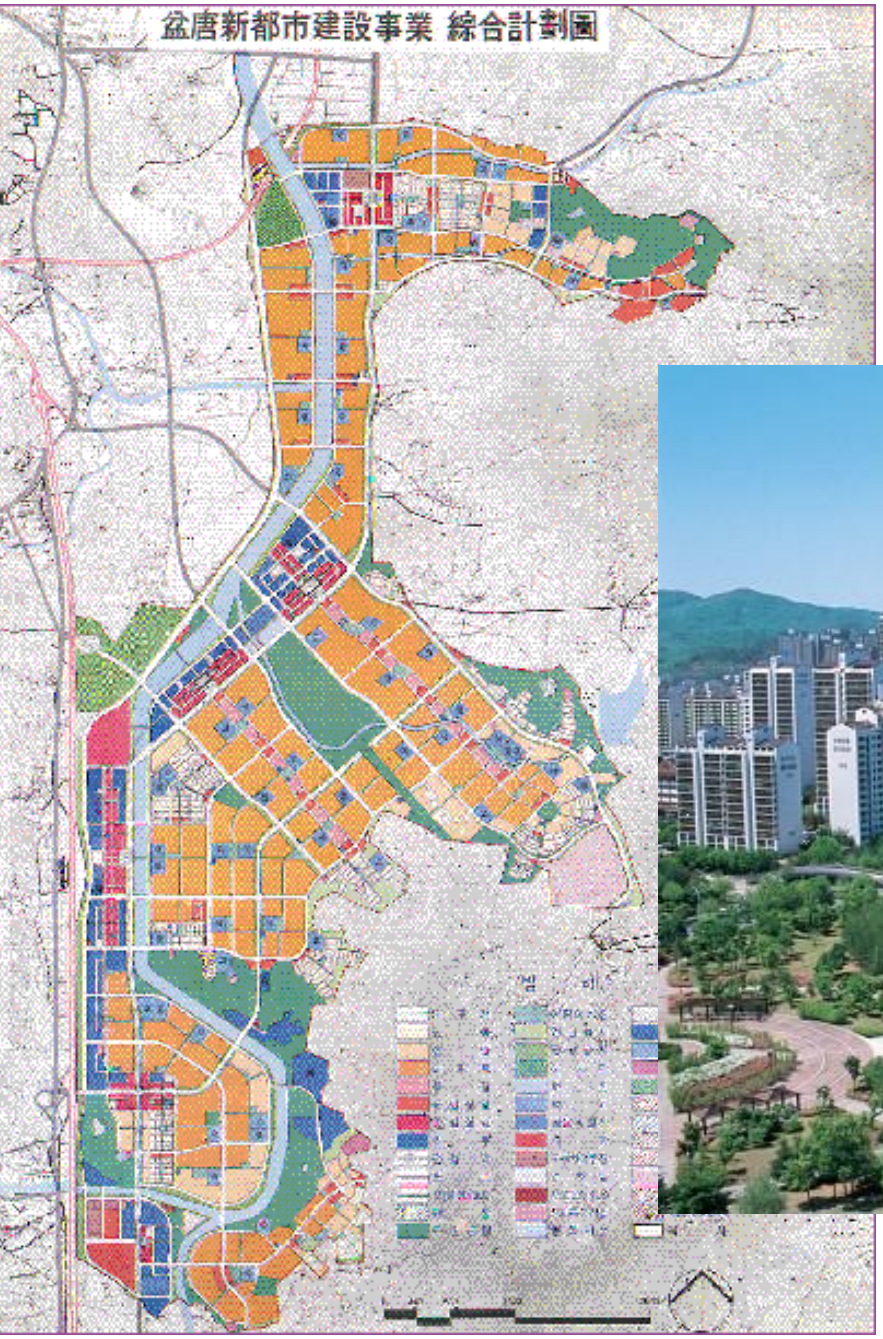
1st Phase	Total
Area	50 Km²
Pop	1.2 M
Housing	292,000 (Condo 281,000)

Land Use Plan

(unit: thousand ㎡, %)

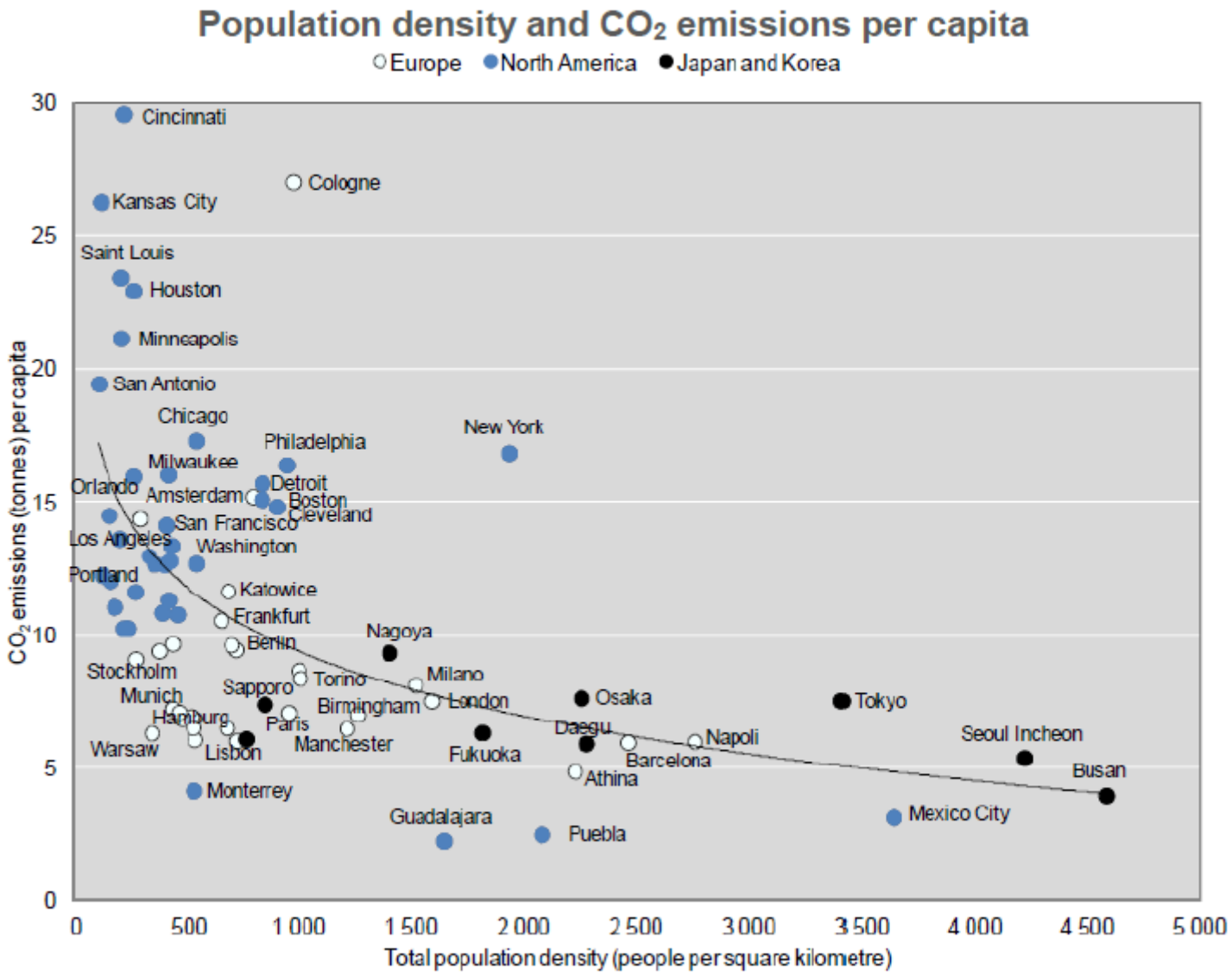
	Total	%	Bundang	Ilsan	Pyung-chon	Sanbon	Jung-dong
Total	50,140	100.0	19,639	15,736	5,106	4,203	5,456
Residential	17,230	34.4	6,350	5,261	1,931	1,811	1,877
Commercial	3,866	7.7	1,640	1,233	247	178	568
Public	29,044	**57.9**	11,649	9,242	2,928	2,214	3,011
Road	10,388	20.7	3,860	3,290	1,187	639	1,412
Green	9,548	19.0	3,810	3,705	801	649	583
Gov't	676	1.3	166	92	150	100	168
School	2,402	4.8	732	584	343	327	416
Etc.	6,030	12.0	3,081	1,571	447	499	432

Urban Development Protects Environment



Bundang

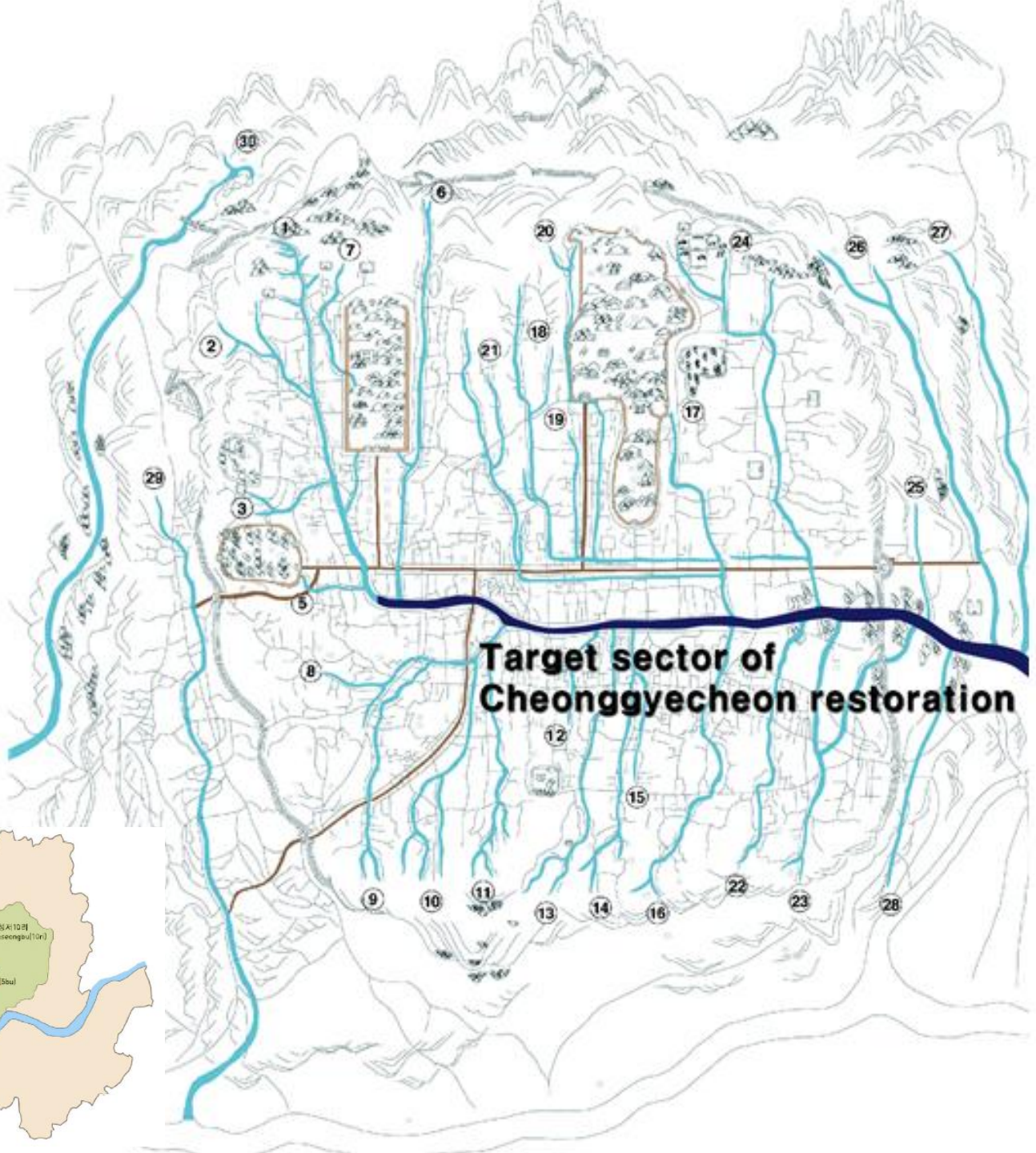
Seoul – Smart and Sustainable City

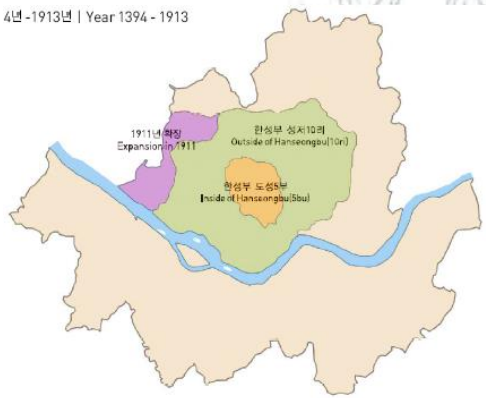


Source: OECD (2012), *Redefining "Urban": A New Way to Measure Metropolitan Areas*, OECD Publishing, doi: *10.1787/9789264174108-en*.

Chenggyecheon (stream) Restoration

URBAN REGENERATION


Target sector of
Cheonggyecheon restoration

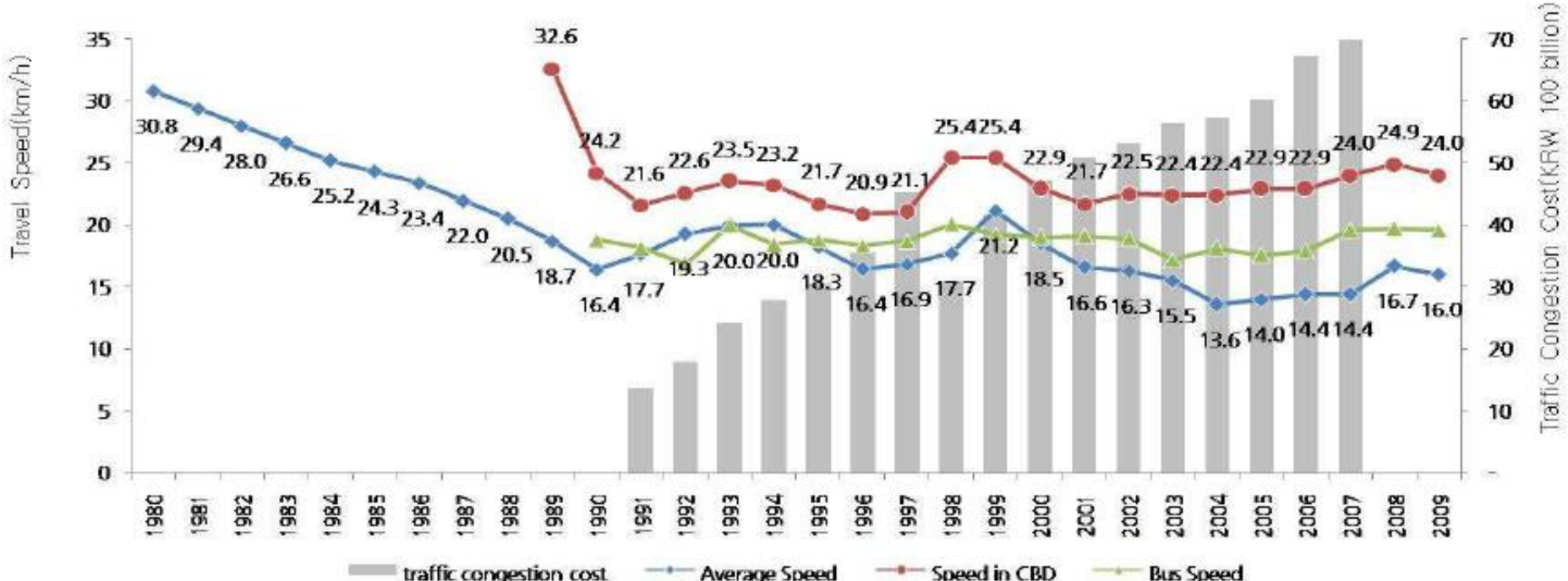

4년 -1913년 | Year 1394 - 1913
1911년 확장
Expansion in 1911
한성부 성저10리
Outside of Hanseongbu(10ri)
한성부 도성5부
Inside of Hanseongbu(5bu)

Cheonggyecheon Elevated Highway

Rising Congestion and Its Cost

- Decreasing Average Travel Speed:
  30.8 km/h in 1980 -> 13.6 km/h in 2004
- Increasing Socio-economic congestion cost:
  over KRW 7 trillion in 2007 (five times that of 1991)

Annual Transport Speed and Congestion Cost Trends



Regeneration by Creative Destruction Construction of (Public) Space

1M **Industrial Economy** Quantity and Efficiency — 10M **Decline** — **Creative Economy** People and Nature

Cheonggyecheon

Change of Atomosphere in Seoul | Cheonggyecheon re-creation plan in earnest | Demolition & Re-creation | Urban Regeneration

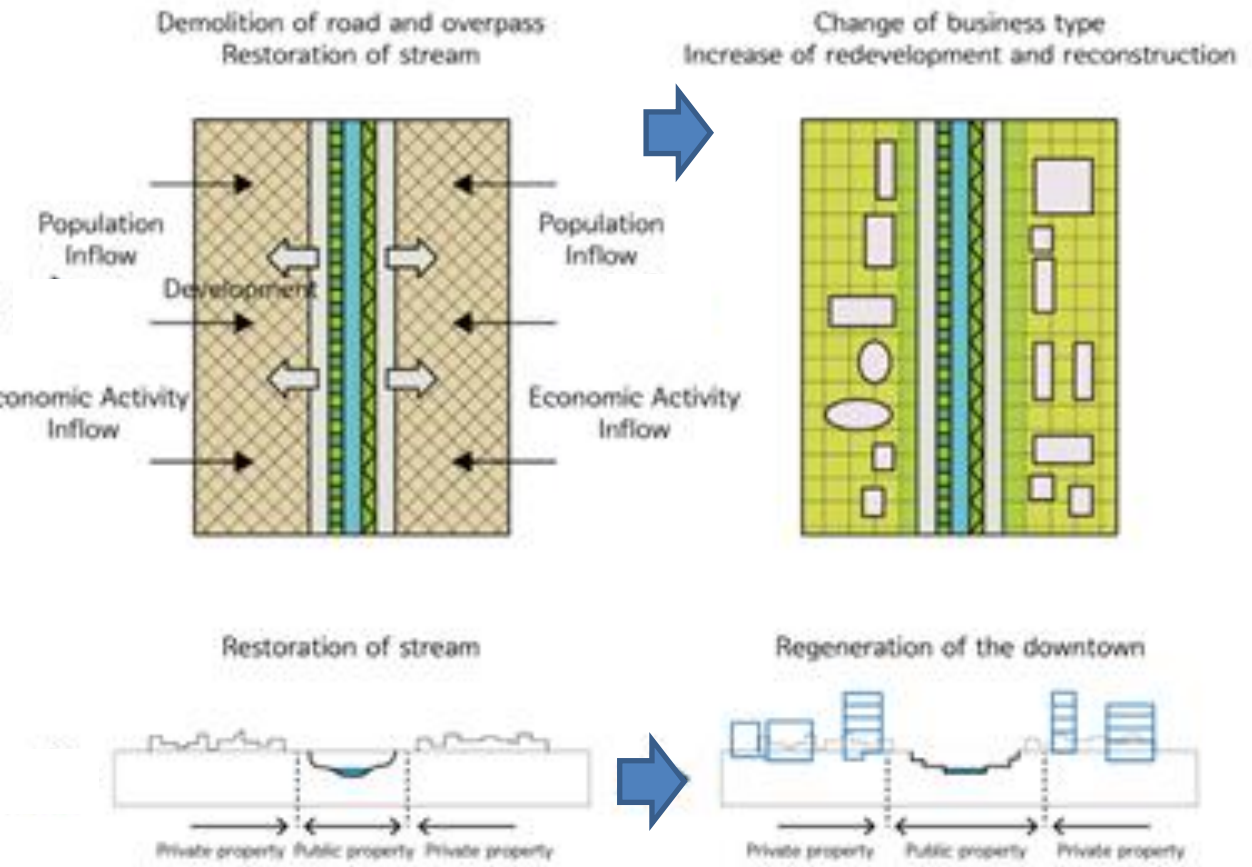
Drainge | Sewage | Road | Restoration | Waterfront Park

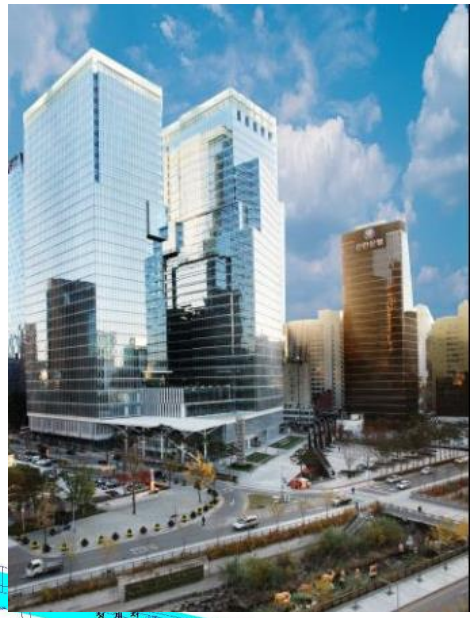
- Flood prevention (dredge)
- Urban sanitation
- 1958 Cover and road construction
- 1967-76 Elevated Highway
- 1990 600th anniversary of the establishment of Seoul as Capital(1994) Namsan park rehabilitation project(1991)
- 2000 Downdown Management Plan
- 2003 Cheonggyecheon Restoration Project
- 2004 Downtown Development Plan
- 2005 Cheonggyecheon Opening
- 2010 'New' Urban Plan
- 2014 Cheonggyecheon Eco Stream Restroation Plan





Strategy: Public-Private Competitive Collaboration





Green: Env. Sustainability

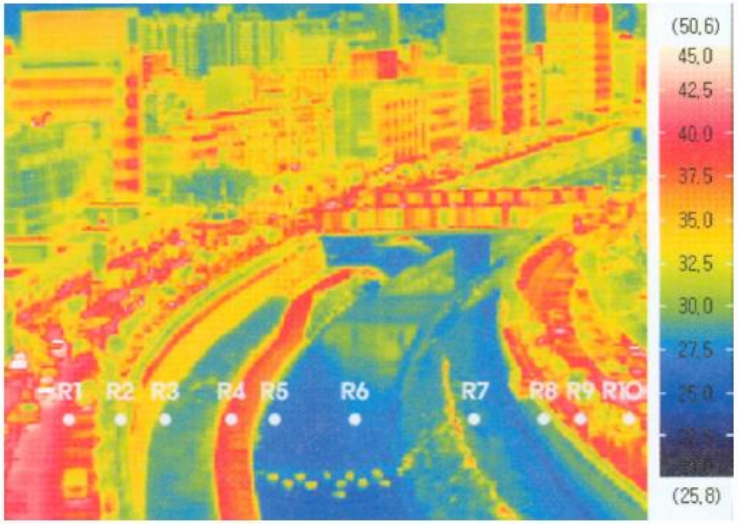
Fish

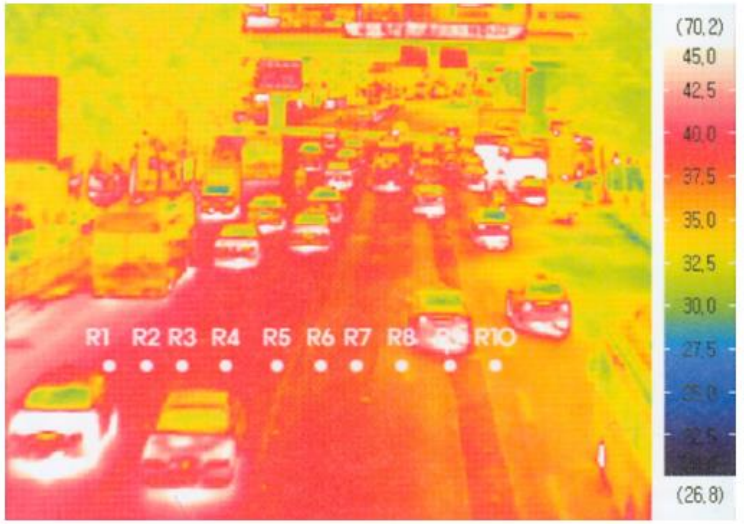
■ 4 –> 15 –> 25 species
('05) ('08)

Birds

■ 6 –> 34 –> 36 species
('05) ('08)

Thermal Images, September 8, 2005

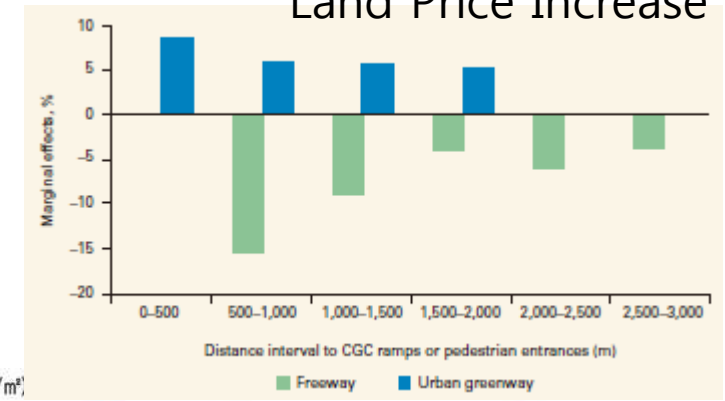




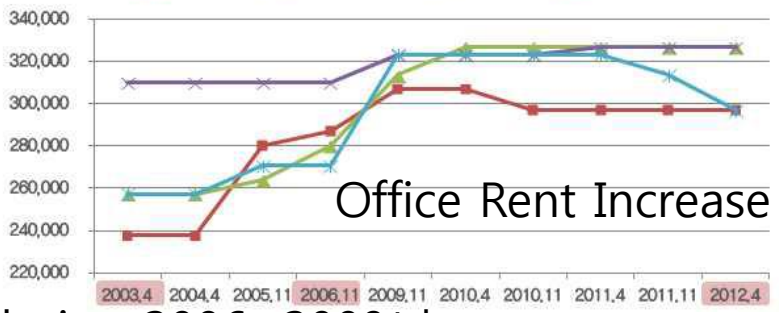
Growth: Competitive City

New Developments

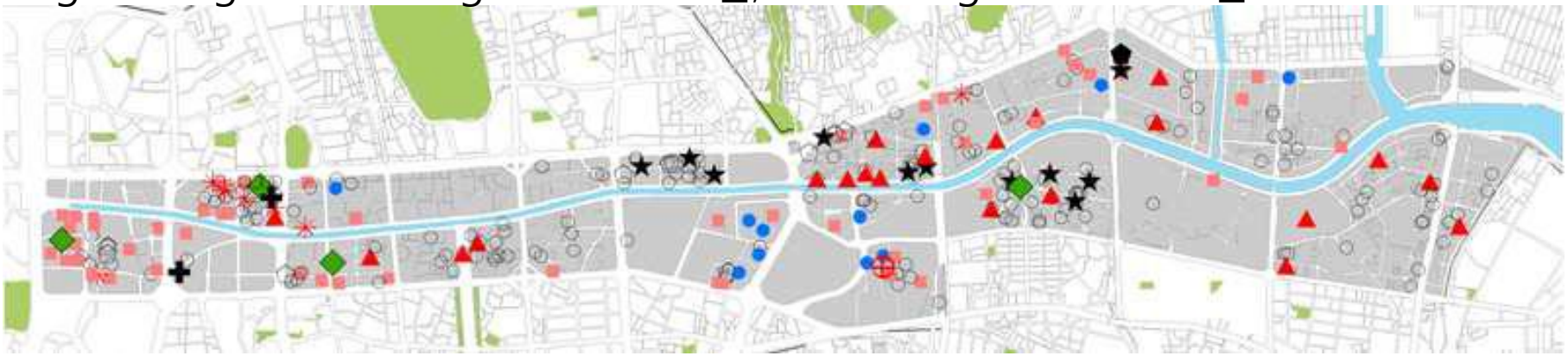
Land Price Increase



Office Rent Increase

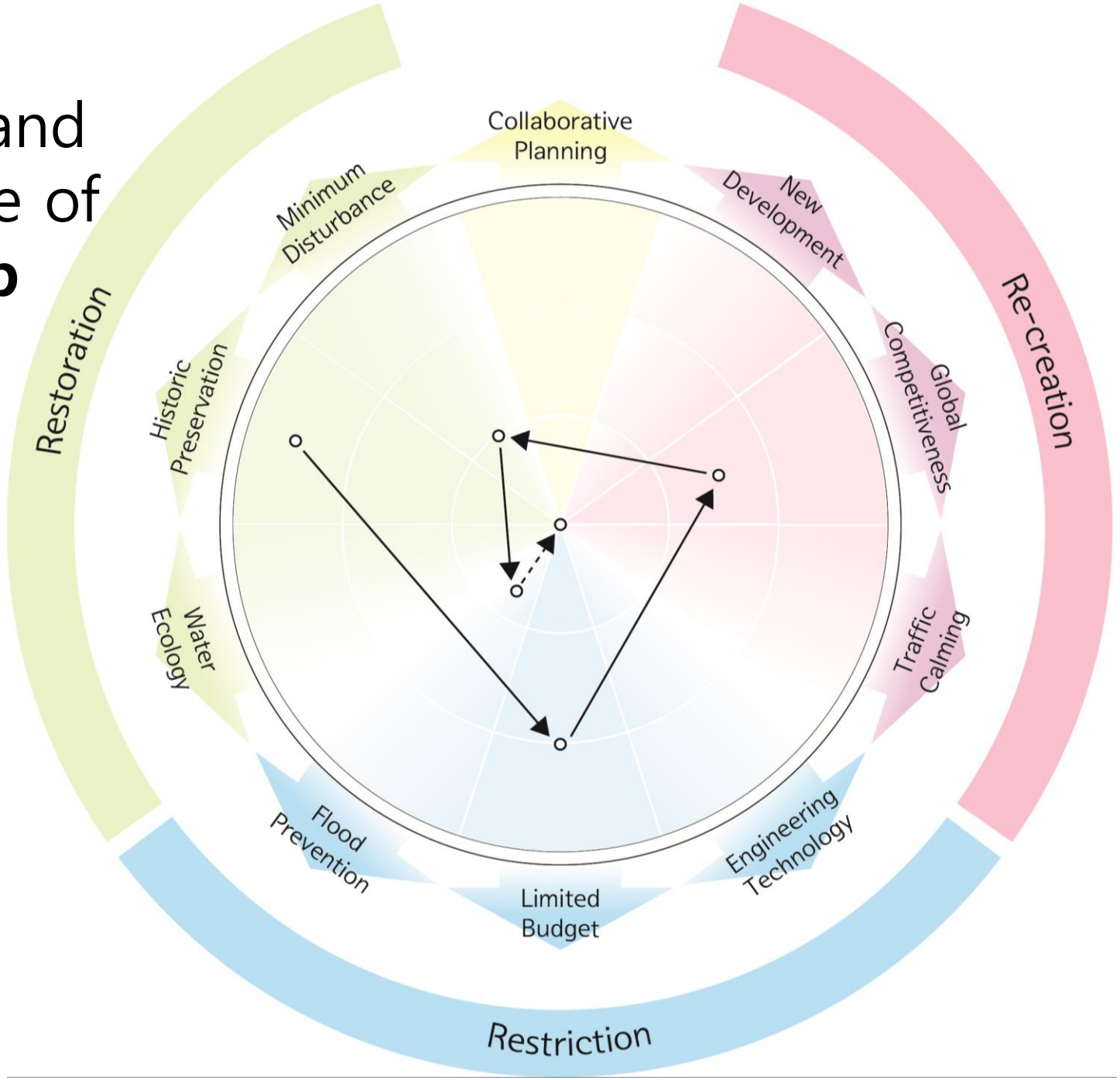


Usage Changes: 44 during 2002~2005년; 895 during 2006~2009년




Urban Regeneration throu
Cheonggyecheon Restorati

Diverse Concerns and Importance of **Leadership**



Set off Public Transportation Reform and Switch Citizens' Behavior

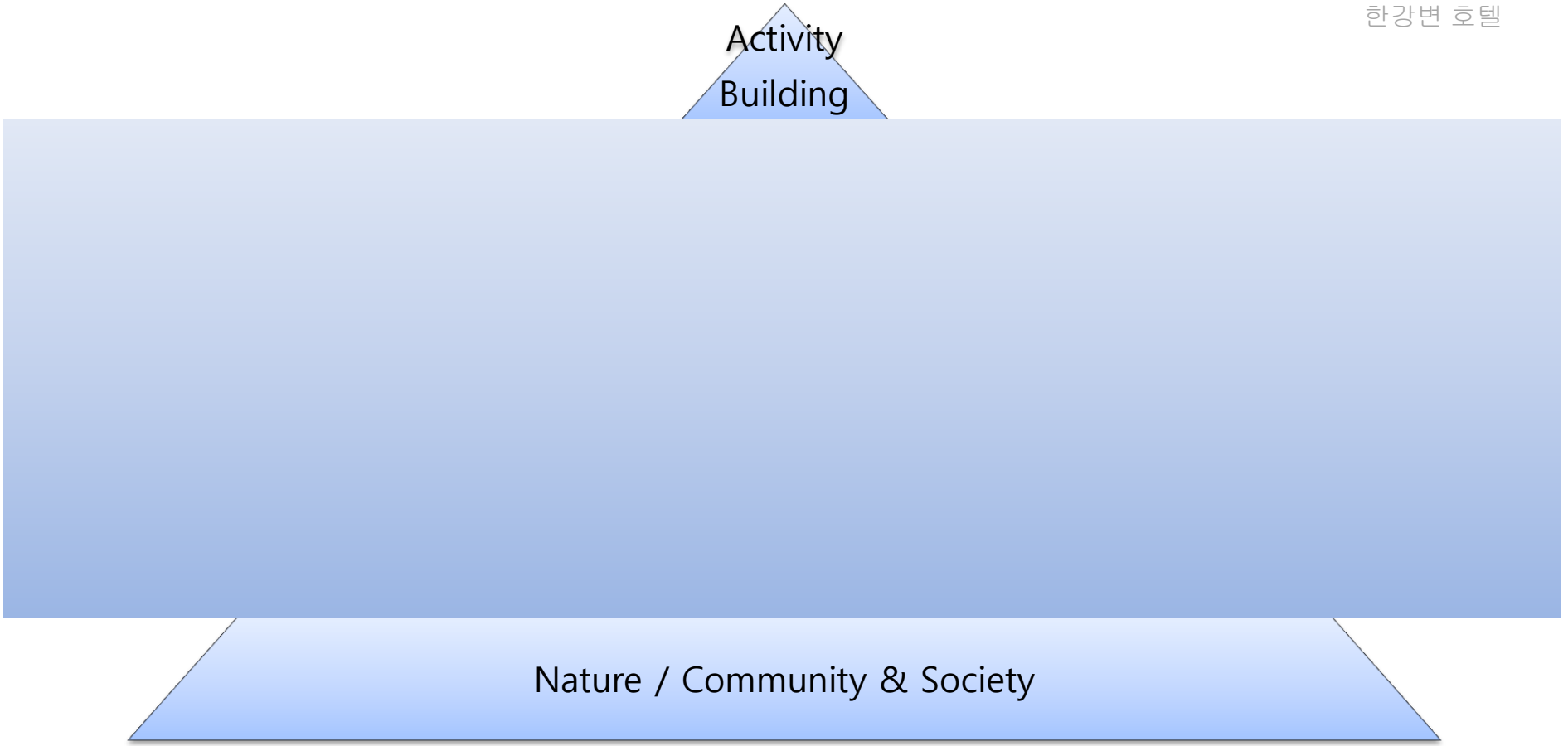
CONCLUDING REMARKS

What Urban Planning does?

Old Days

Few People, Low Density

남산 중턱 주택
한강변 호텔



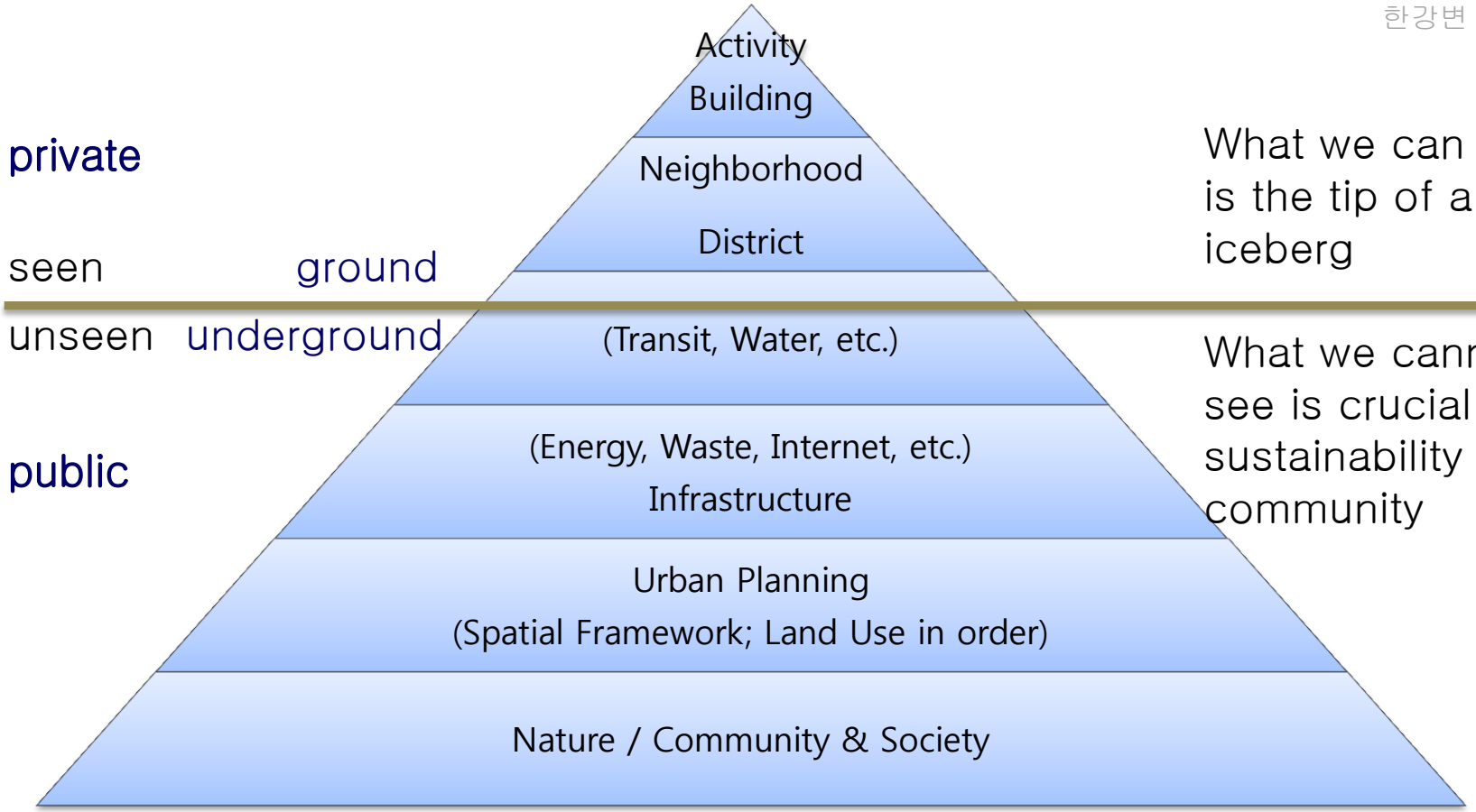
Much freedom of individuals in land use and location is acceptable.

What Urban Planning does?

Old Days Today

Few People, Low Density Many People, High Density

남산 중턱 주택
한강변 호텔



What we can see is the tip of an iceberg

What we cannot see is crucial for sustainability of community

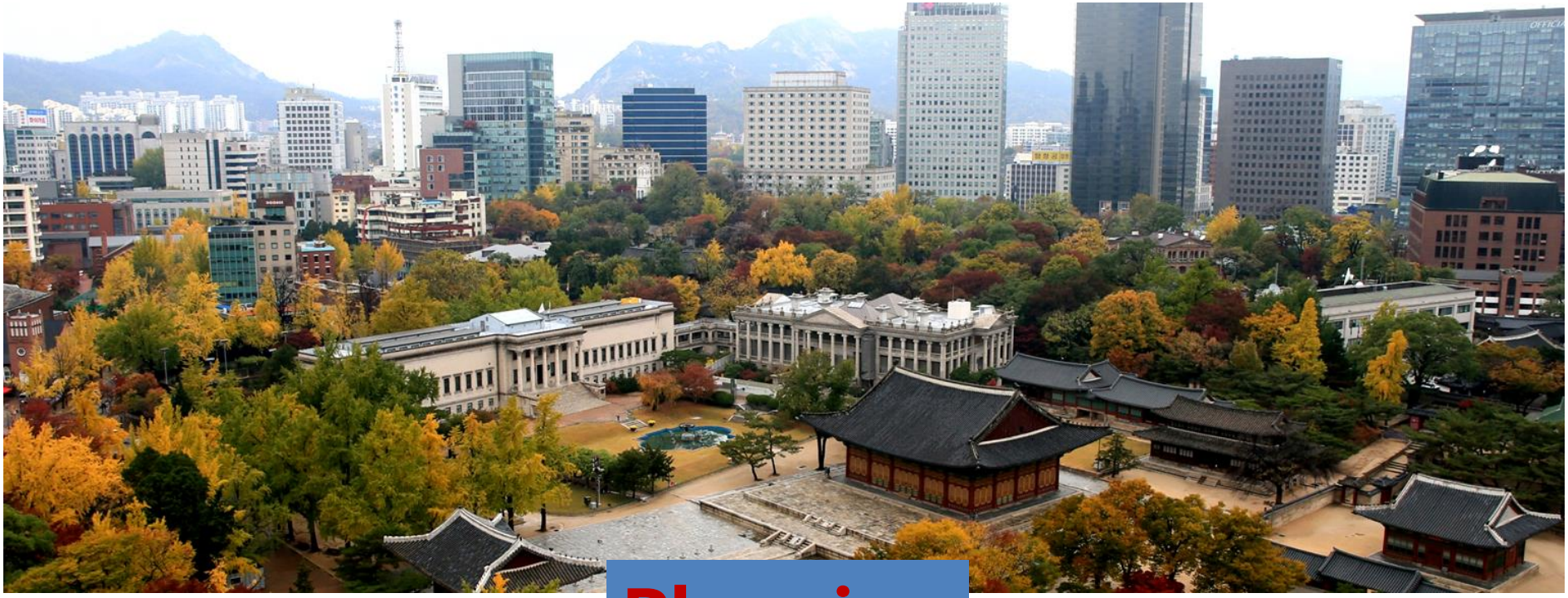
*We need an interface between individual right of freedom and sustainable development of city community – **planning**.*

Smart and Sustainable Urbanization

- With rapid growth of cities; proper **urbanization planning (including infrastructure)** is required
- "Urban planning is **not about images** but is a way to make a difference; it is a **framework** that helps cities transform a **vision** into **reality** using space as a key resource for development and engaging stakeholders along the way." (UN-HABITAT, 2013)
- Urban planning is an important tool for cities to achieve **sustainable development**.
- **Leadership** is crucial.

Smart and Sustainable Urbanization

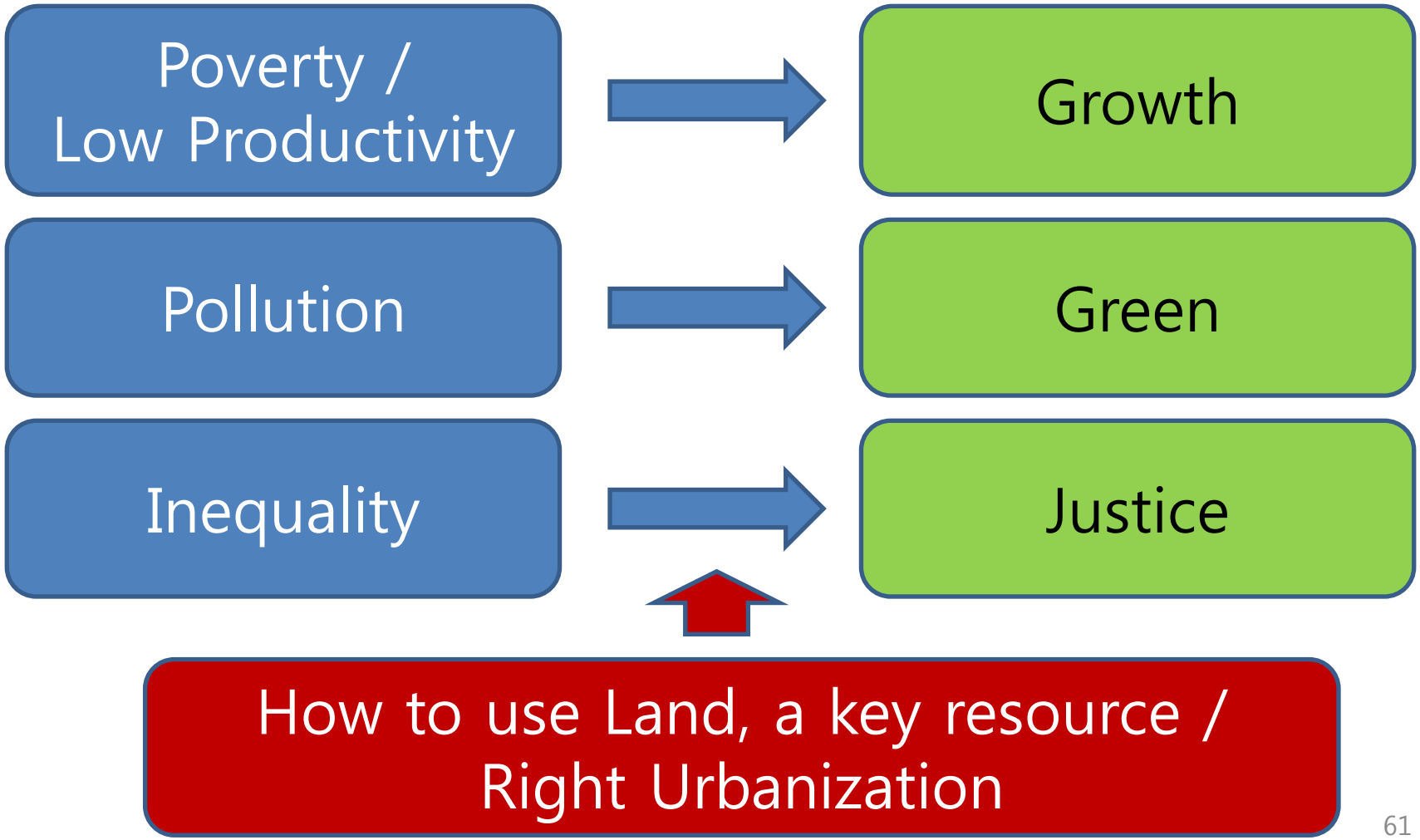
Economic Growth, Social Inclusiveness, and Environmental Health



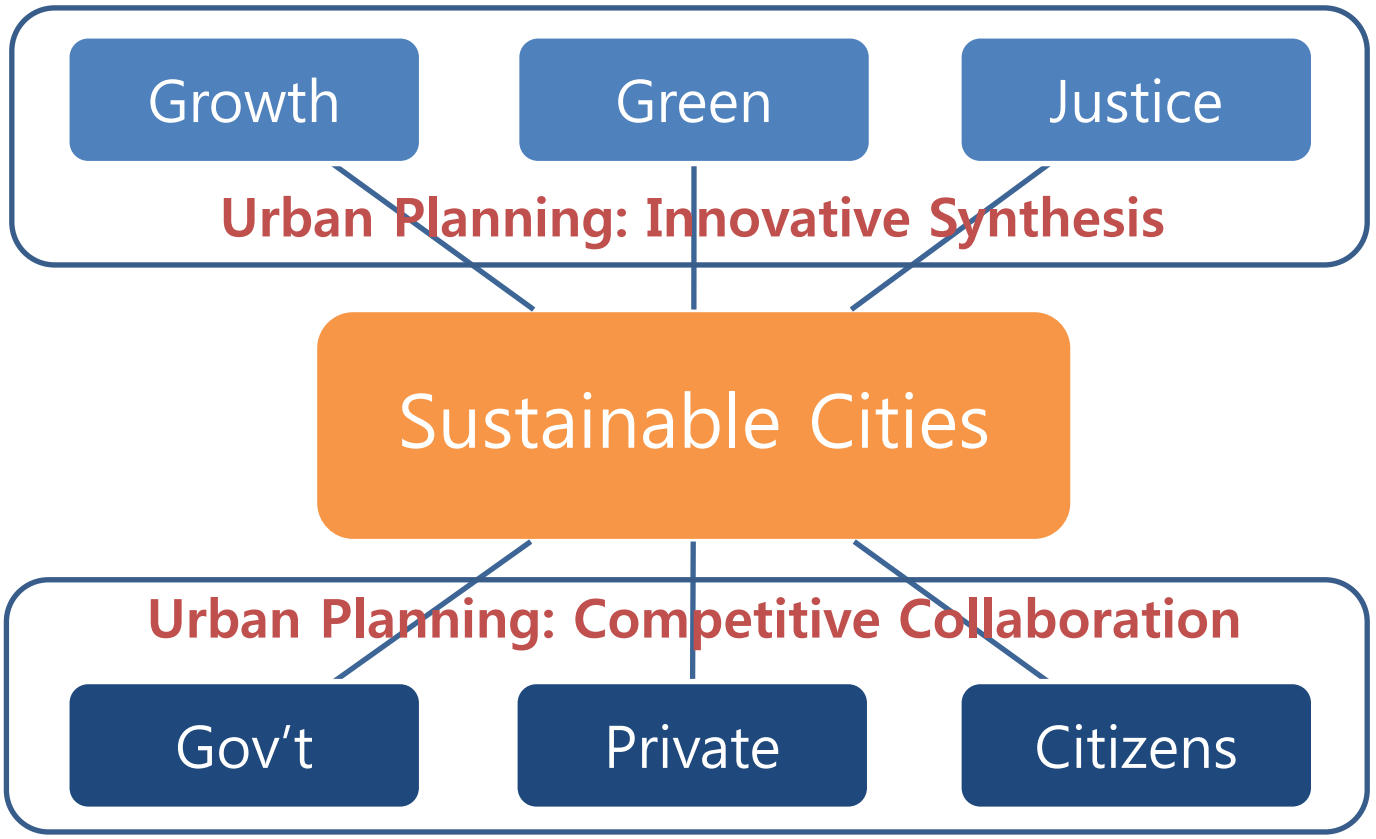
Planning

- Urban Land Green
- Transp-ortation
- Water Air
- Energy Waste
- Communi-cation
- Housing Architecture

Three Major Problems and Corresponding Goals



Three plus One (3+1) Goals
Innovative Synthesis among 3 goals
and Public-Private Competitive Collaboration



Three goals can conflict with each other. This demands **innovative solutions** and **urban planning** for a quality synthesis.

Three parties can conflict with each other. This demands **leadership** and **mutual learning**.

Action without Vision is only passing time,
Vision without Action is merely day dreaming, but
Vision with Action can change the world.

Dream don't work, unless YOU DO.

– Nelson Mandela-

2015. 4.

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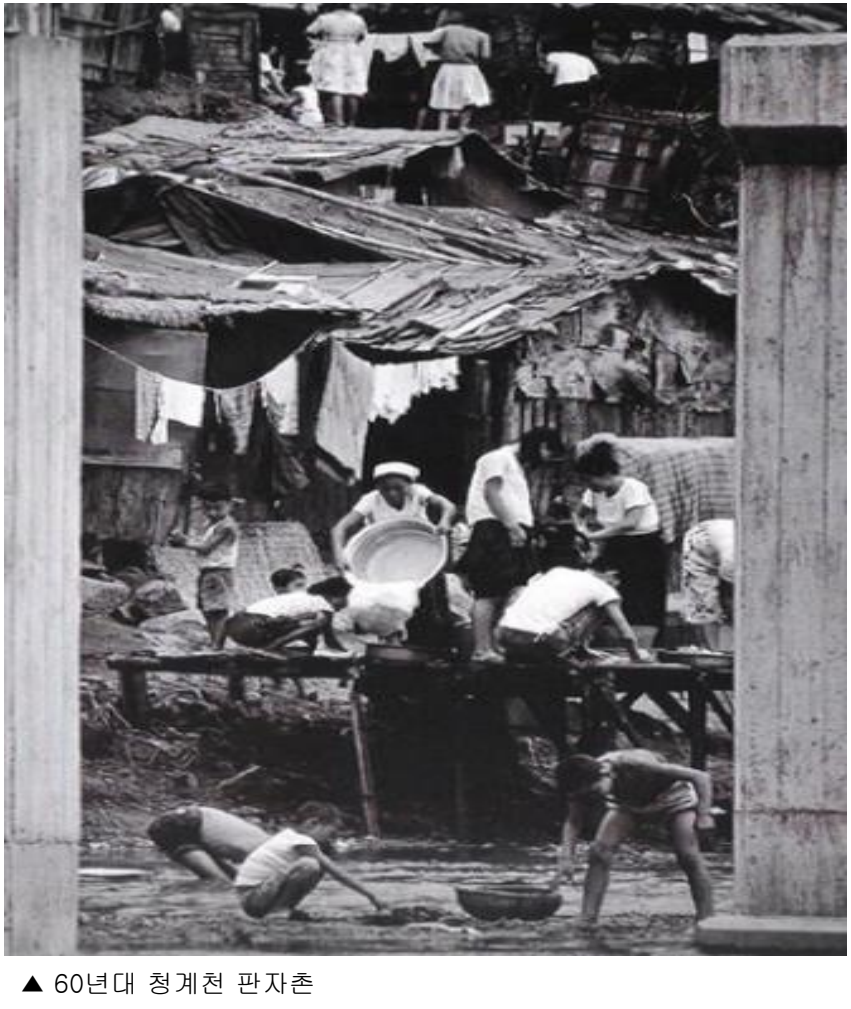
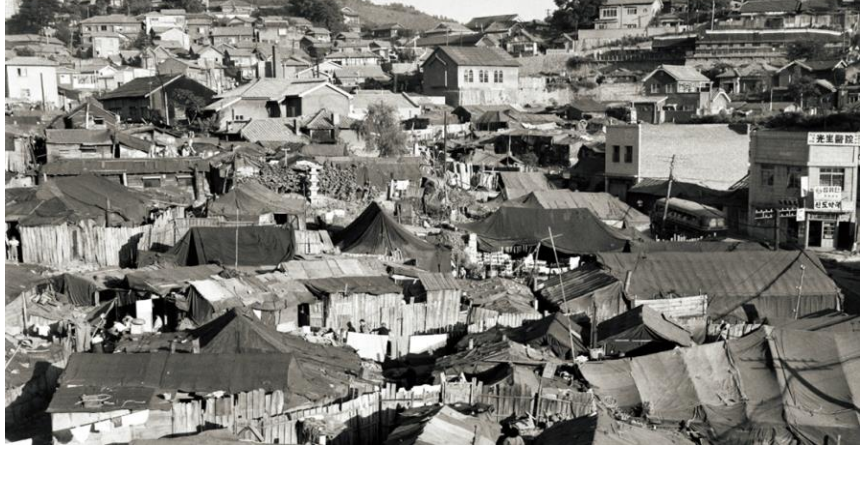
Individual vs. Collective Urban

Housing shortage and Low Quality of Living

Cheonggyecheon Informal Settlements circa 1960





▲ 60년대 청계천 판자촌

사진출처: 서울역사박물관, 2011, 강남 40년 영동에서 강남으

Effects: Three plus One (3+1) Goals

- Provides flood protection for up to a 200-year flood event and can sustain a flow rate of 118mm/hr.
- Increased overall biodiversity by 639% between the pre-restoration work in 2003 and the end of 2008 with the number of plant species increasing from 62 to 308.
- Reduces the urban heat island effect with temperatures along the stream 3.3° to 5.9°C cooler than on a parallel road 4-7 blocks away.
- Reduced small-particle air pollution by 35% from 74 to 48 micrograms per cubic meter.
- Contributed to 15.1% increase in bus ridership and 3.3% in subway ridership in Seoul between 2003 and the end of 2008.
- Increased the price of land by 30-50% for properties within 50 meters of the restoration project.
- Attracts an average of 64,000 visitors daily.
- Increased citizens' annual economic value of a natural stream from KRW 20,226 (before) to KRW 37,724 (after) per household.
- **Innovative Synthesis of three goals, beyond sectoral optimization.**
- **One City, One Goal, and One Planning, for one urban optimization.**